



Pierce Transit

BUS RAPID TRANSIT LOCALLY PREFERRED ALTERNATIVE UPDATE

1

2

WHAT IS A LOCALLY PREFERRED ALTERNATIVE (LPA)?

LPA Required Elements

- Mode – Bus Rapid Transit (BRT)
- Termini – Spanaway to Downtown Tacoma
- Alignment

Needed for Small Starts Rating

- Preliminary station locations
- Preliminary lane configurations



Federal Transit
Administration

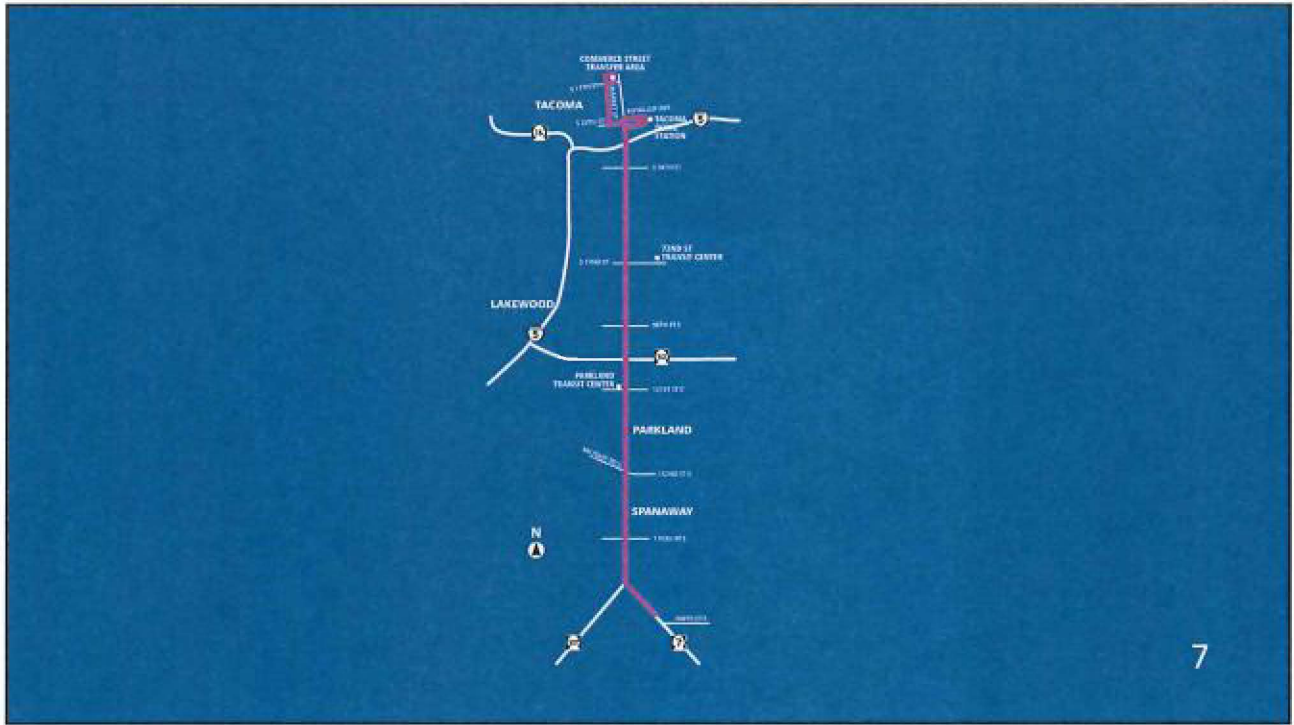
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MODE

4

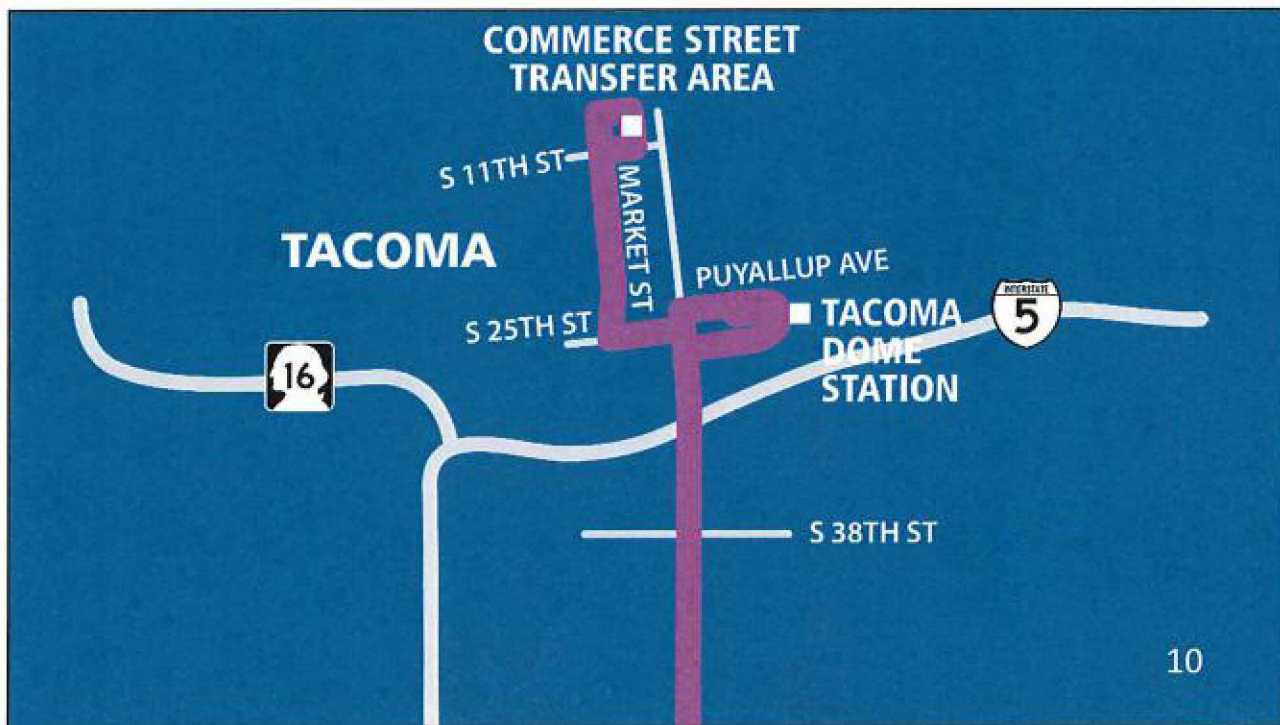
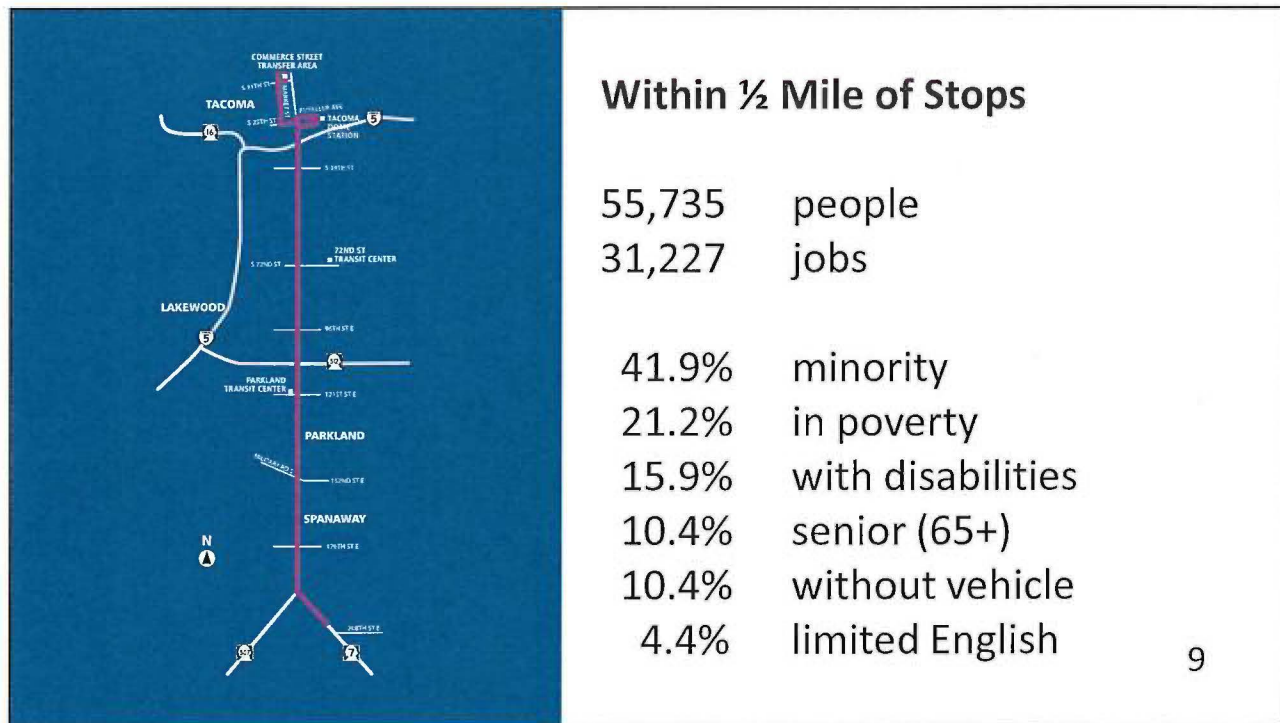


TERMINI



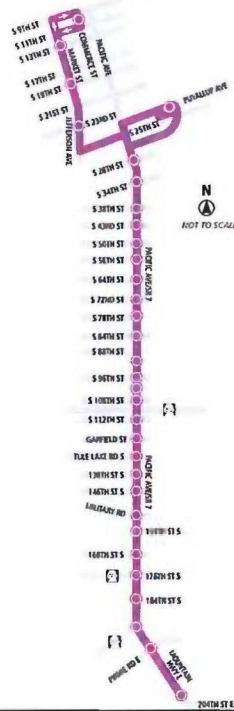
ALIGNMENT

8



PRELIMINARY STATIONS

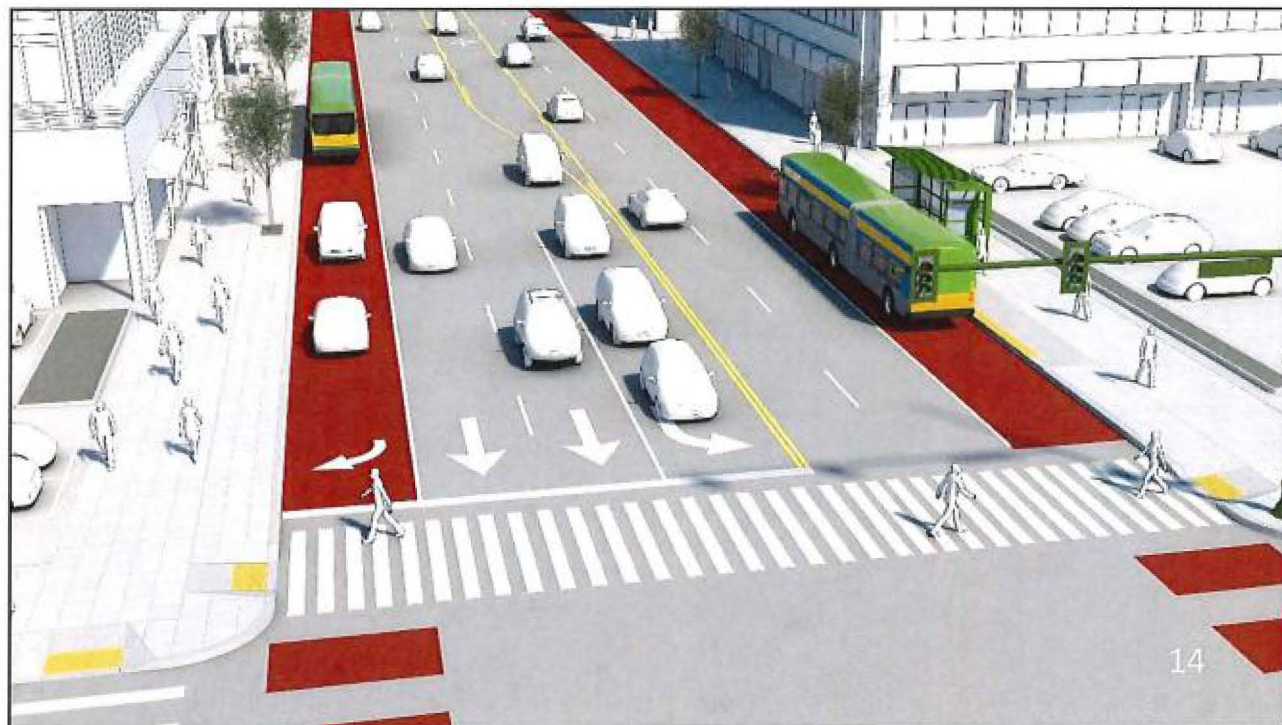
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12

PRELIMINARY CONFIGURATION

13



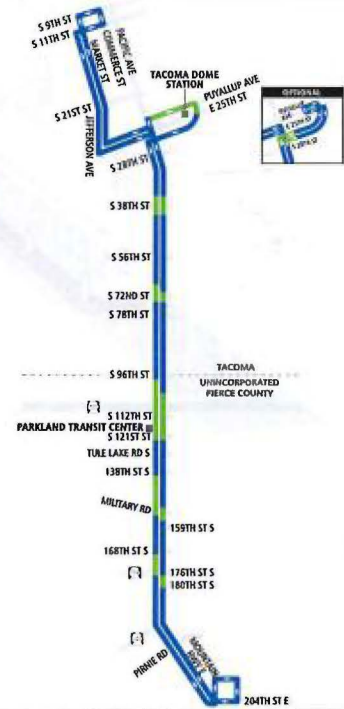
CURBSIDE ALTERNATIVE

BRT in Mixed Traffic

- 10.2 miles
- \$5.1M per mile

BRT in BAT Lane

- 4.2 miles
- \$14.0M per mile



15



16



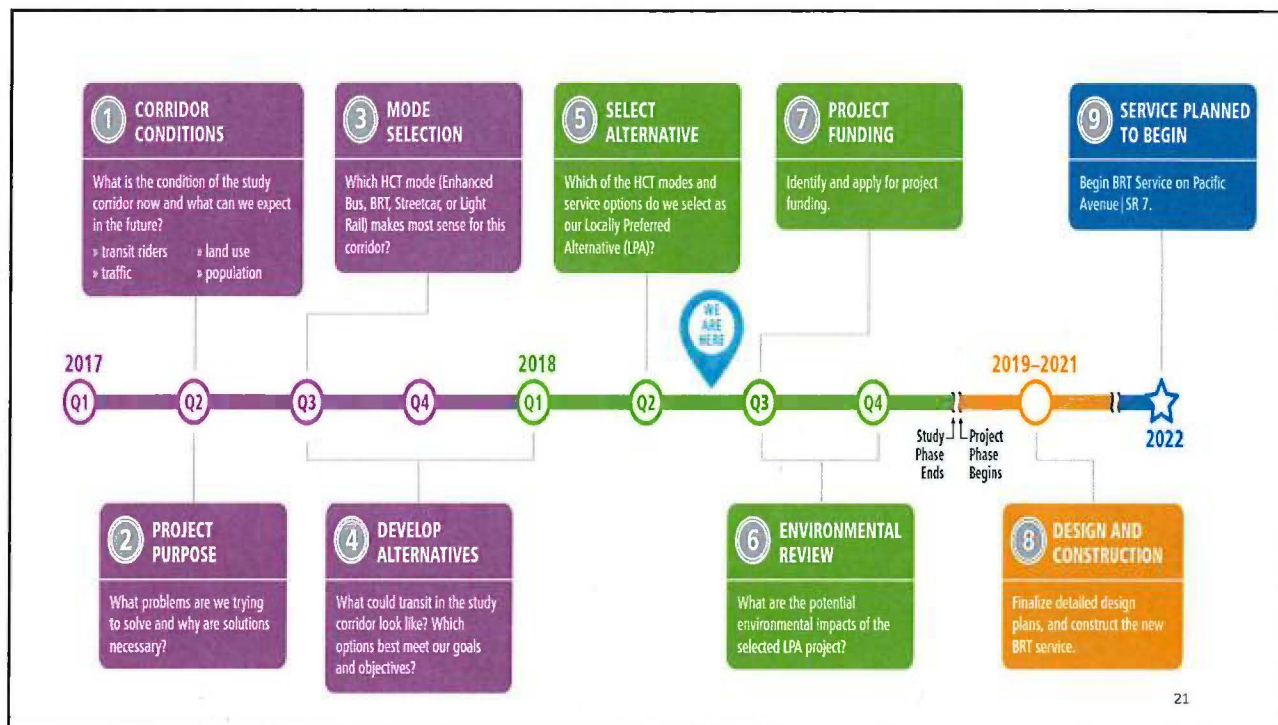
EVALUATION

	No Build	Curbside	Median
Weekday Boardings	3	4	5
Transit Travel Time Improvement (Spanaway to Tacoma Dome Station)	1	4	5
Transit Travel Time Improvement (Spanaway to Downtown)	1	3	4
Auto Travel Time Improvement in Peak Period (Spanaway to Downtown)	3	4	3
Improve Transit Time Reliability	1	3	4
Minimize Impact to General Traffic Access and Circulation	3	4	3
Operating Cost per Passenger	5	3	4
Population within ½ Mile Walk Shed	5	5	5
Improve Pedestrian Access and Safety	2	4	5
Facilitate Connections to Other Transit Services	2	5	5
Support Corridor Revitalization	1	4	3
Minimize Impact to Private Property	5	4	3
Weekday Boardings per Service Hour	3	4	5
Consistency with Adopted Local and Regional Transportation Plans	2	5	5
Increase Corridor Person Throughput Potential	1	5	5
Average Score	2.5	4.1	4.3
Total Score	38.0	61.0	64.0

EVALUATION

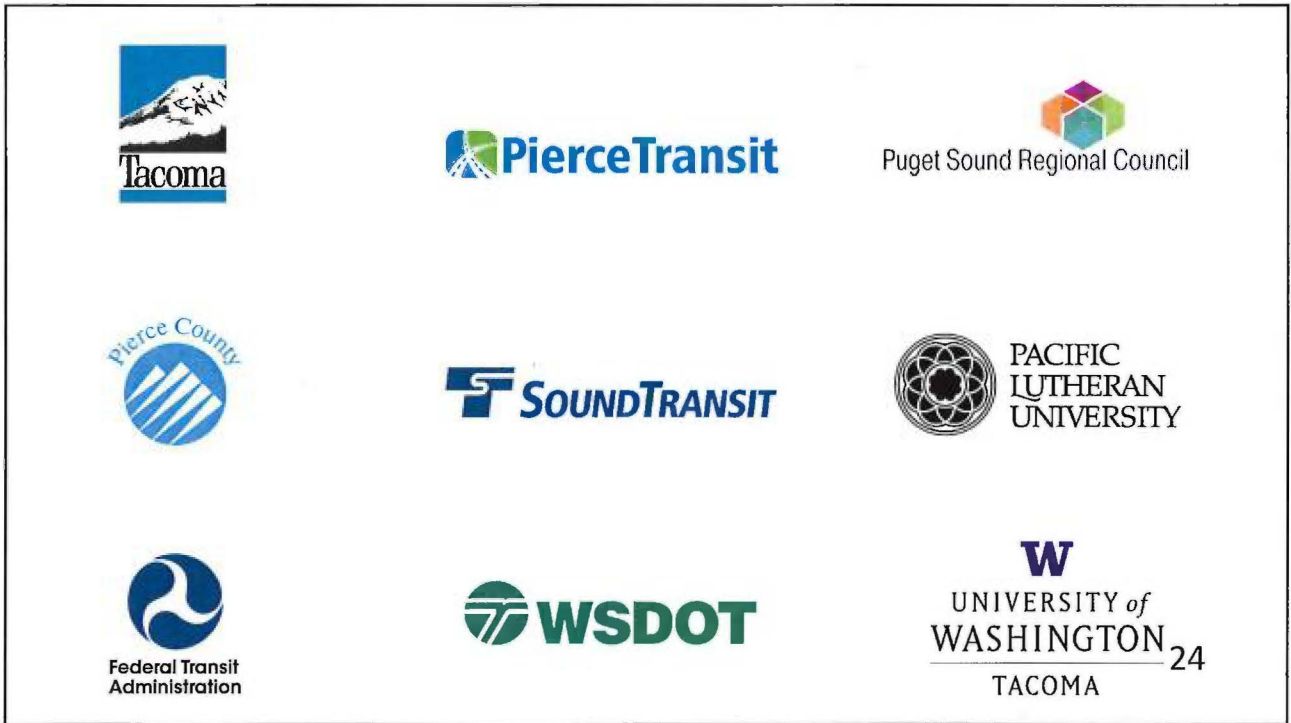
	Current 2018	No Build 2040	Curbside 2040	Median 2040
Daily Ridership	3,500	4,400	6,500 (48%)	6,800 (55%)
Travel Time: Spanaway to TDS	63 min	63 min	43 min (32%)	39 min (38%)
Travel Time: Spanaway to Downtown	62 min	62 min	55 min (11%)	50 min (19%)
Number of Stops/Stations (Pairs)	65	65	32	32
Capital Cost	N/A	\$0M	\$134M	\$150M

NEXT STEPS



LOCALLY PREFERRED ALTERNATIVE (LPA)

- May 30 Technical Advisory Committee Recommendation
- May 30 Project Management Team Recommendation
- May 31 Adopt into Regional Transportation Plan by PSRC
- June 11 Pierce Transit Board Update
- June 19 City of Tacoma Council Study Session
- June 20 City of Tacoma Transportation Commission
- June 25 Pierce County Council Study Session
- June 26 City of Tacoma Council Action
- July 3 Pierce County Council Action
- July 9 Pierce Transit Board Action
- Sep 15 Submit Small Starts Grant Application









TACOMA TRANSPORTATION COMMISSION

PLANNING WORK
PROGRAM

OVERVIEW

1. Background
2. 2019 Amendment Applications
3. Other Initiatives

Purpose of the Meeting:

Coordination with the Transportation
Commission

BACKGROUND

1. Applications

- Public Initiatives
- High Priority Implementation Actions
- Prior Work Program

2. Process

- Scoping and Assessment
- Options Analysis
- Plan and Code Amendments
- Public Review and Recommendation
- City Council Process

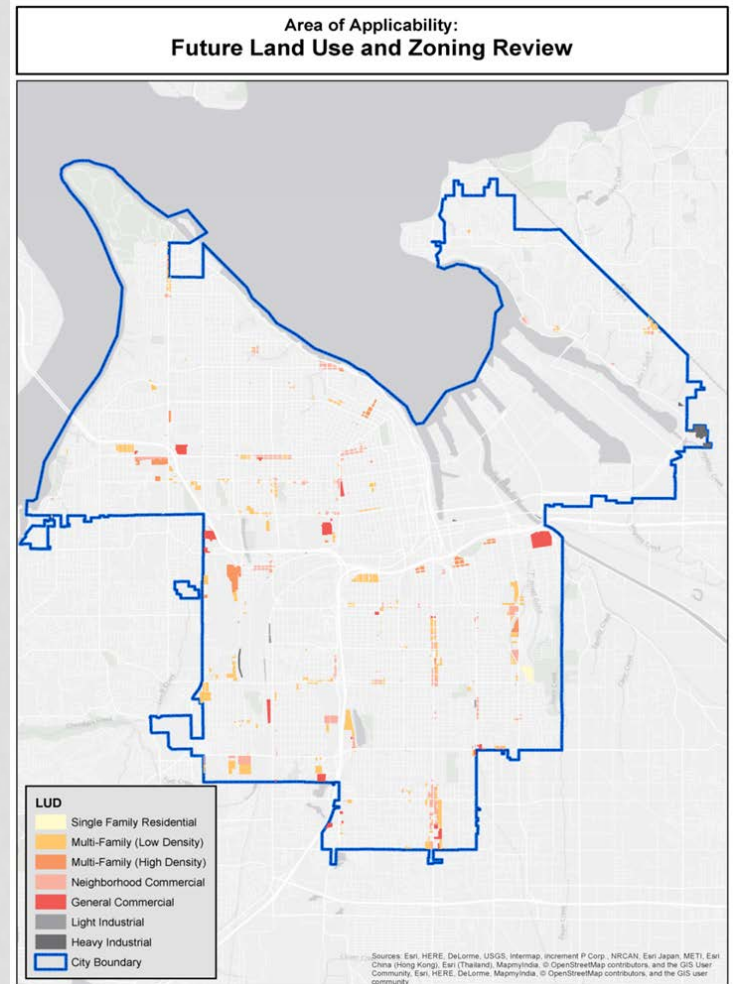
Public Engagement

2019 AMENDMENTS

Application	Amendment Type
1. Future Land Use Implementation and Area-wide Rezone	Plan and Code
2. Commercial Zoning Update	Plan and Code
3. Shoreline Master Program Periodic Review	Plan and Code
4. JBLM Accident Potential Zone II	Code
5. Open Space Phase II - Geohazards	Code
6. Historic Preservation Code Improvements	Code
7. Minor Amendments	Plan, Code

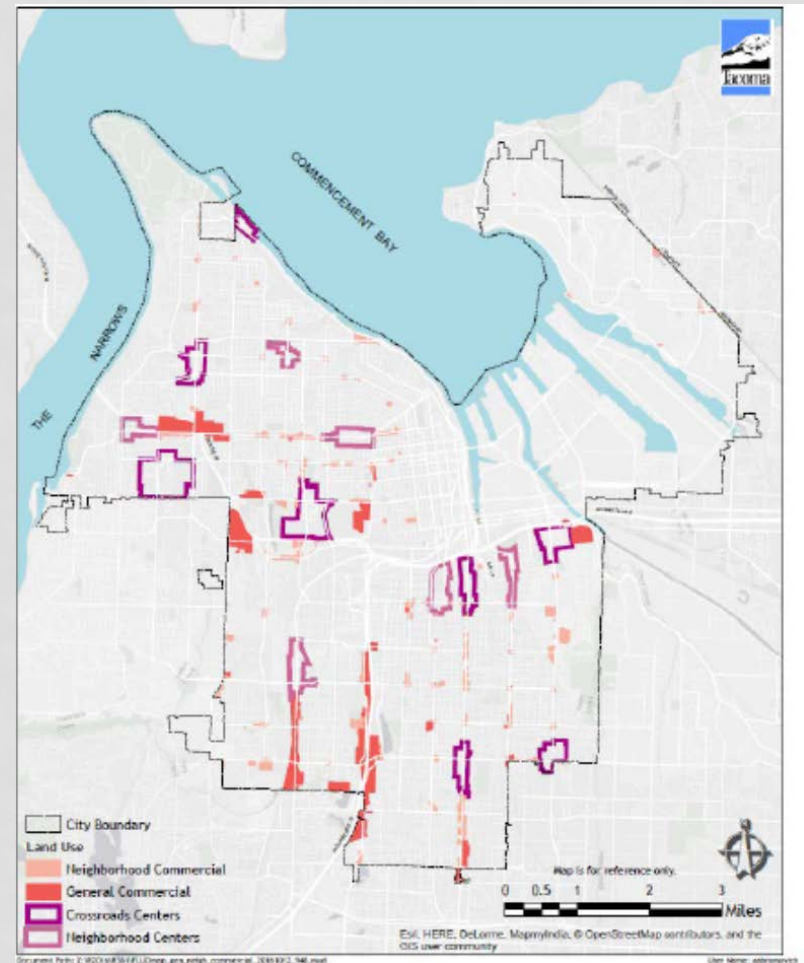
1. FLUM IMPLEMENTATION

- **Purpose:** To improve the consistency between the Comprehensive Plan and implementing zoning.
- **Area of Applicability:** Citywide
 - <https://wspdsmap.cityoftacom.a.org/website/FLUM/>



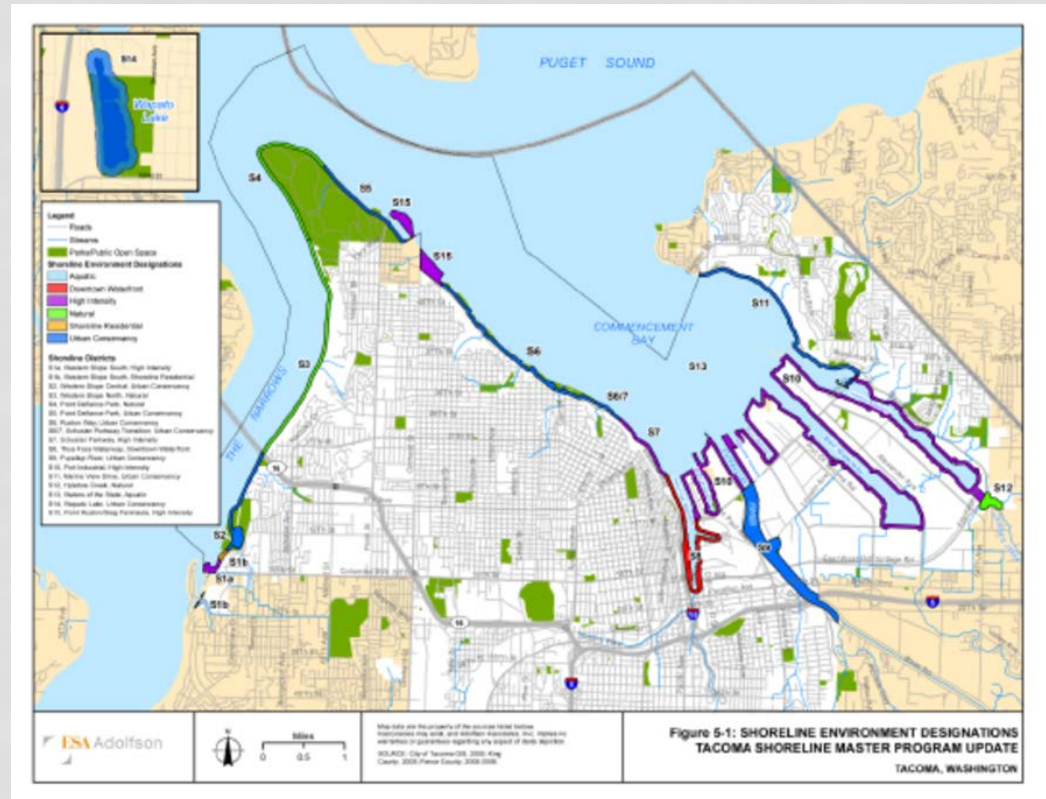
2. COMMERCIAL ZONING UPDATE

- **Purpose:** Amend the General and Neighborhood Commercial Zoning Districts to implement design and development policies.
- **Area of Applicability:**
 - City wide, T, C-1, C-2 and PDB zoning districts



3. SHORELINE MASTER PROGRAM

- **Purpose:** Conduct the Periodic Review as required under the Shoreline Management Act
- **Applicability:**
 - 200' from OHWM
 - All Shorelines of Statewide Significance

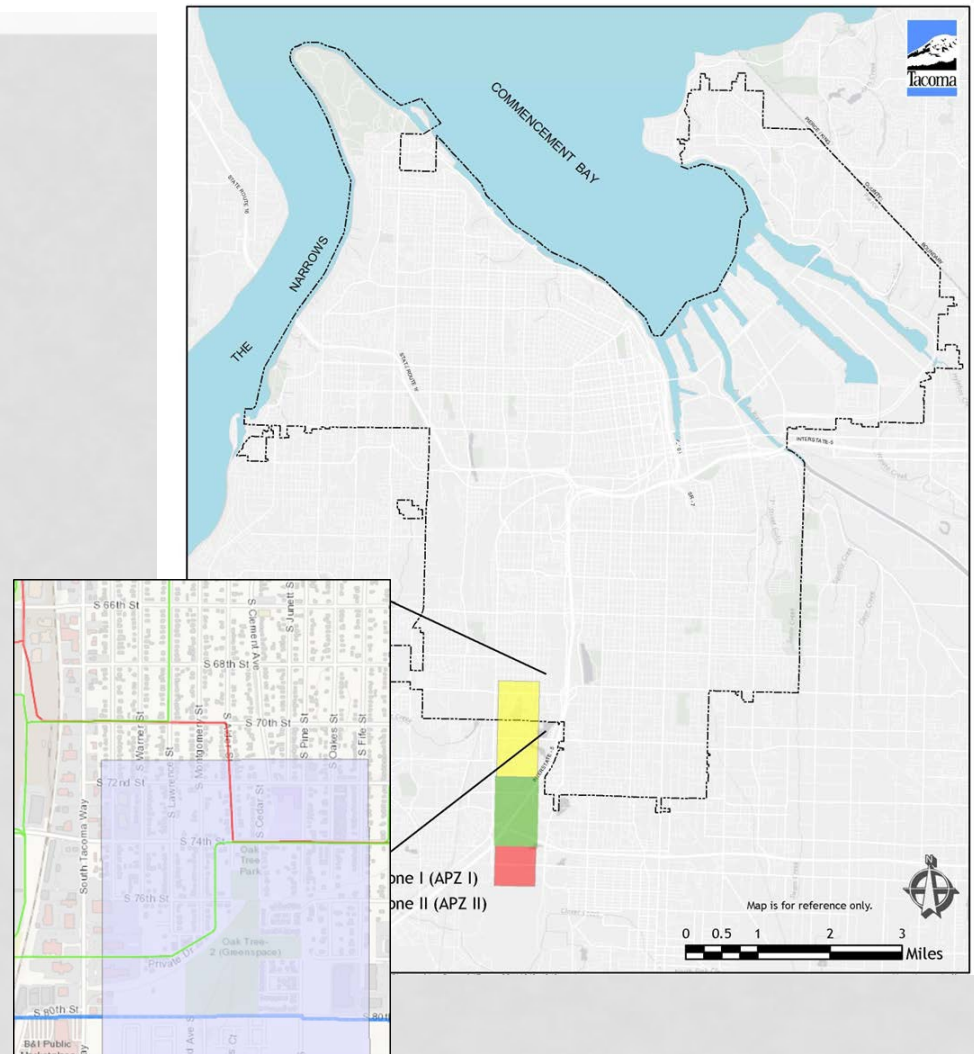


4. JLUS ACCIDENT POTENTIAL ZONE OVERLAY

Purpose: Develop an Airport Compatibility Overlay Zone to implement the recommendations of the Joint Land Use Study and the Accident Potential Zone II.

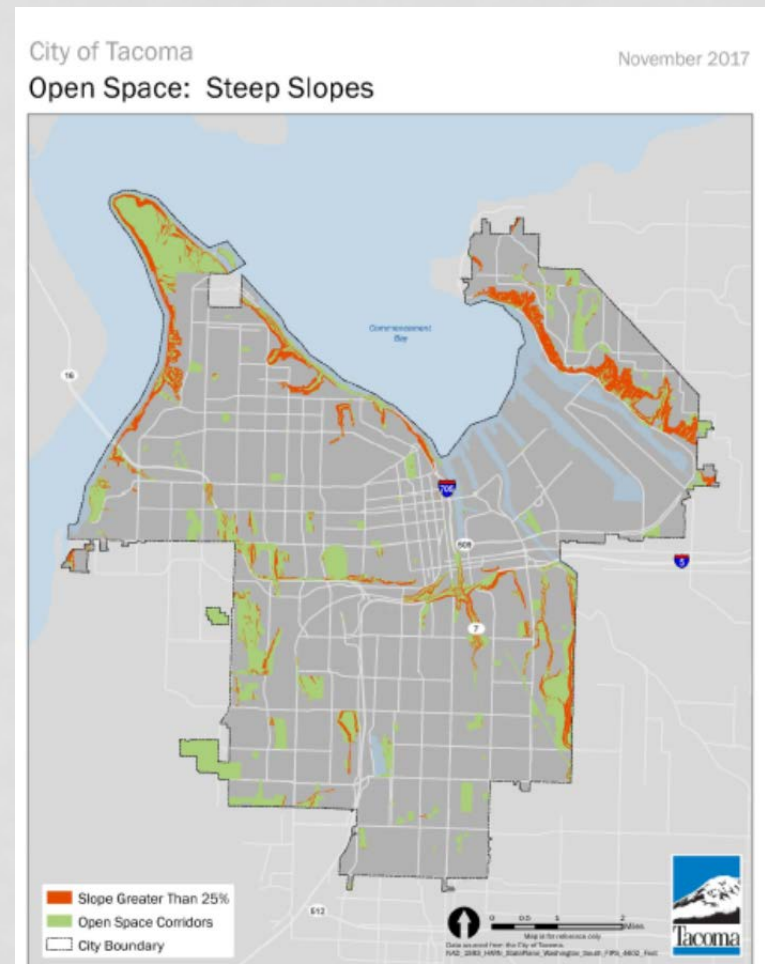
Area of Applicability:

- South Tacoma Way
- S. 72nd Street
- S. Fife Street
- S.80th Street/City Limits



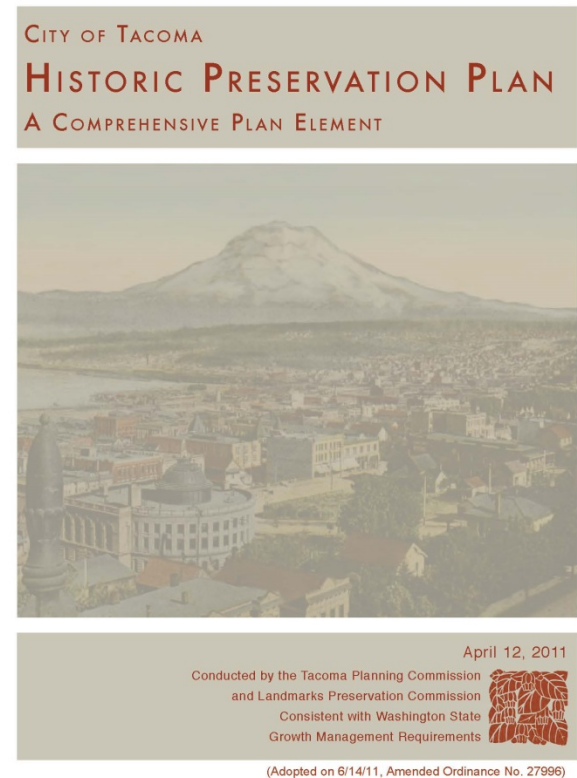
5. OPEN SPACE CORRIDORS – GEOLOGICALLY HAZARDOUS AREAS

- **Purpose:** Evaluate and apply the Best Available Science to protect life and property and to increase certainty for property owners and the community.
- **Area of Applicability**
 - Citywide
 - Landslide and erosion hazard areas
 - Predominantly located within Open Space Corridors



6. HISTORIC PRESERVATION CODE IMPROVEMENTS

- **Purpose:** Improve the effectiveness of the Historic Preservation Program through amendments to demolition review, the designation process, and Historic Conditional Use Permits.
- **Applicability:**
 - Citywide



7. MINOR AMENDMENTS

- **Purpose:**
 - Keep information current
 - Address inconsistencies
 - Correct errors
 - Clarify intents
 - Enhance language
 - Increase implementation and administrative efficiency
 - Improve customer service

OTHER INITIATIVES

- Tideflats Interim Regulations
- Tideflats Subarea Plan
- Affordable Housing/Infill Pilot Program
- Detached ADUs
- Urban Design Program
- Manitou Annexation
- Pacific Avenue TOD Corridor Plan

QUESTIONS FOR THE COMMISSION

- What are the projects of interest for the Commission?
- How would the Commission like to be involved?
 - Stay informed?
 - Consultation?
 - Collaboration?

2019 AMENDMENTS

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7. Minor Amendments	Plan, Code



Rail Crossing Options Evaluation

Options Summary

IMPROVEMENT	BENEFIT POINT TOTAL Higher Number = Higher Benefit	* BENEFIT-COST INDEX TOTAL Higher Number = Higher Benefit	PLANNING LEVEL COST ESTIMATE	RANGE ROUGH ORDER OF MAGNITUDE COSTS
Rail Crossing Options - McCarver St				
OPTION 1A - Another Train Coming Signage	23.0	153.3	\$ 150,000	\$100,000 - \$200,000
OPTION 1B - Full Grade Separation	92.0	2.3	\$ 40,000,000	\$30,000,000 - \$50,000,000
OPTION 1C - Non-motorized Grade Separation with Ramps	48.0	2.4	\$ 20,000,000	\$15,000,000 - \$30,000,000
OPTION 1D - Non-motorized Grade Separation with Elevators	48.0	6.4	\$ 7,500,000	\$5,000,000 - \$15,000,000
OPTION 1E - 2 Quad Gates & Medians	28.0	40.0	\$ 700,000	\$600,000 - \$800,000
OPTION 1F - 4 Quad Gates	34.0	85.0	\$ 400,000	\$300,000 - \$500,000
Rail Crossing Options - E. D St				
OPTION 2A - 4 Quad Gates	30.0	75.0	\$ 400,000	\$300,000 - \$500,000
OPTION 2B - 2 Quad Gates & Medians	27.0	270.0	\$ 100,000	\$300,000 - \$500,000
OPTION 2C - Full Grade Separation	95.0	1.6	\$ 60,000,000	\$50,000,000 - \$70,000,000
OPTION 2D - Non-motorized Grade Separation with Ramps	48.0	1.7	\$ 28,000,000	\$18,000,000 - \$38,000,000
OPTION 2E - Non-motorized Grade Separation with Elevators	48.0	6.4	\$ 7,500,000	\$5,000,000 - \$15,000,000
OPTION 2F - E. D St Closure	30.0	50.0	\$ 600,000	\$500,000 - \$700,000
Rail Crossing Options - E. C St				
OPTION 3A - 4 Quad Gates	24.0	60.0	\$ 400,000	\$300,000 - \$500,000
OPTION 3B - 2 Quad Gates & Medians	22.0	146.7	\$ 150,000	\$100,000 - \$200,000
OPTION 3C - Full Grade Separation	95.0	1.6	\$ 60,000,000	\$50,000,000 - \$70,000,000
OPTION 3D - Non-motorized Grade Separation with Ramps	48.0	1.9	\$ 28,000,000	\$18,000,000 - \$38,000,000
OPTION 3E - Non-motorized Grade Separation with Elevators	48.0	6.4	\$ 7,500,000	\$5,000,000 - \$15,000,000
OPTION 3F - E. C St Closure	30.0	50.0	\$ 600,000	\$500,000 - \$700,000
Rail Crossing Options - S. C St				
OPTION 4A - 4 Quad Gates	33.0	82.5	\$ 400,000	\$300,000 - \$500,000
OPTION 4B - 2 Quad Gates & Medians	27.0	1080.0	\$ 25,000	\$20,000 - \$30,000
OPTION 4C - Full Grade Separation	93.0	2.1	\$ 45,000,000	\$35,000,000 - \$55,000,000
OPTION 4D - Non-motorized Grade Separation with Ramps	39.0	1.6	\$ 25,000,000	\$15,000,000 - \$35,000,000
OPTION 4E - Non-motorized Grade Separation with Elevators	39.0	5.2	\$ 7,500,000	\$5,000,000 - \$15,000,000
Rail Crossing Options - 6th Ave				
OPTION 5A - Wayside Horns & Pedestrian Improvements	40.0	36.4	\$ 1,100,000	\$1,000,000 - \$1,200,000
OPTION 5B - 4 Quad Gates	49.0	40.8	\$ 1,200,000	\$1,100,000 - \$1,300,000
OPTION 5C - Full Grade Separation	72.0	1.2	\$ 60,000,000	\$50,000,000 - \$70,000,000
OPTION 5D - Non-motorized Grade Separation with Ramps	48.0	1.9	\$ 25,000,000	\$20,000,000 - \$35,000,000
OPTION 5E - Non-motorized Grade Separation with Elevators	48.0	6.4	\$ 7,500,000	\$5,000,000 - \$15,000,000
Rail Crossing Options - S 19th St				
OPTION 6A - Wayside Horn & Pedestrian Improvements	33.0	66.0	\$ 500,000	\$400,000 - \$600,000
OPTION 6B - 4 Quad Gates	45.0	45.0	\$ 1,000,000	\$900,000 - \$1,100,000
OPTION 6C - Full Grade Separation	87.0	2.2	\$ 40,000,000	\$30,000,000 - \$50,000,000
OPTION 6D - Non-motorized Grade Separation with Ramps	42.0	2.1	\$ 20,000,000	\$15,000,000 - \$30,000,000
OPTION 6E - Non-motorized Grade Separation with Elevators	43.0	5.7	\$ 7,500,000	\$5,000,000 - \$15,000,000

* Benefit - Cost Index:
If the total cost is \$2.8M and the benefit ranking is 15, the Benefit-Cost Index is 15 divided by 2.8 (2.8 is \$2,800,000 divided by \$1,000,000), equating to 5.4.
The Benefit - Cost Index uses the mid point range of the range of costs.

Scoring Sample

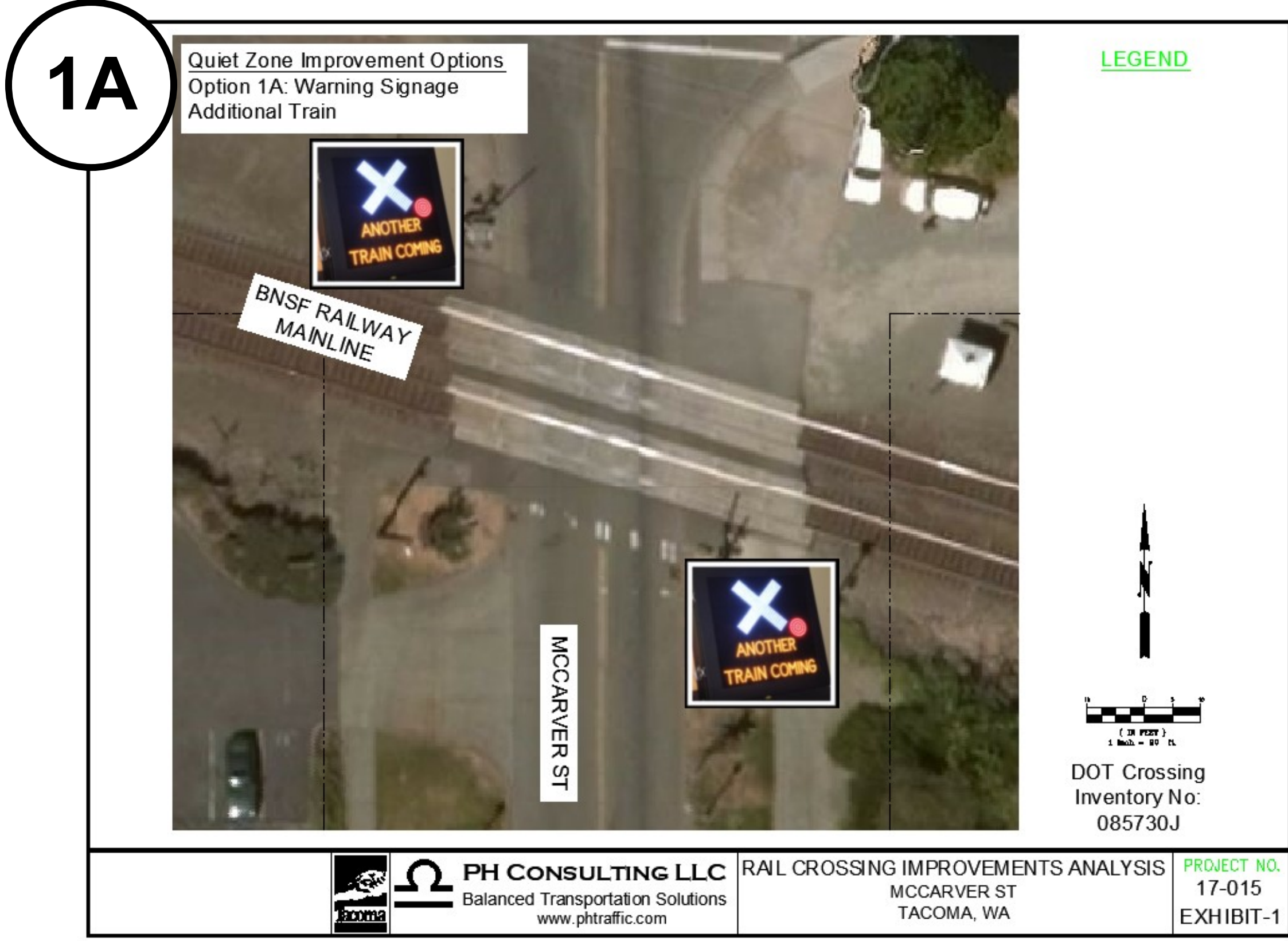
Table 1A. Step 1 Thresholds by Criteria OLD TOWN: MCCARVER STREET AND RUSTON WAY

STEP 1 CRITERIA	DATA	IMPROVEMENT COUNTER MEASURE	BENEFIT PRIORITY POINTS
CROSSING SAFETY BENEFIT GROUP			
Number of Tracks	2	OPTION 1A	2
Roadway Classification	Major Collector	None	0
Average Weekday Traffic Volumes (2017)	3633	None	0
Pedestrian / Bicycle Volumes (High/Medium/Low)	High	OPTION 1A	2
Speeds of Trains (MPH)	57	None	0
Rail Traffic (# of daily trains)	72	OPTION 1A	2
Visibility Issues? (Yes/No)	Yes	OPTION 1A	2
Number of Pedestrian Collisions	2	OPTION 1A	2
Number of Vehicle Collisions (Year Range 1986 - 2017)	6	OPTION 1A	2
Geometry Issues? (Yes/No)	No	None	0
SUBTOTAL SCORE			12
ESTIMATED PLANNING COST	Range	\$100,000 - \$200,000	\$ 150,000
COST OF IMPROVEMENTS BENEFIT-COST INDEX			80.0
PEDESTRIAN / BICYCLE MOBILITY GROUP			
Are there ADA Compliant Sidewalks? (Yes/No)	Yes	None	0
Are there ADA Compliant Ramps? (Yes/No)	Yes	None	0
Are there Existing Pedestrian Gates? (Yes/No)	Yes	OPTION 1A	1
Surface treatment of crossing (Bike Compatible?) (Yes/No)	Yes	None	0
Are non-motorized separated from vehicles at crossing? (Yes/No)	Yes	None	0
SUBTOTAL SCORE			1
ESTIMATED PLANNING COST	Range	\$100,000 - \$200,000	\$ 150,000
COST OF IMPROVEMENTS BENEFIT-COST INDEX			7
VEHICLE MOBILITY GROUP			
Current Allowed Number of Lanes	2	None	0
Are Traffic Signals in close Proximity? (Yes/No)	Yes	OPTION 1A	1
Proximity of other Road Connections (How Close?)	High Very Close	OPTION 1A	1
Proximity of Key Land Uses (recreational/commercial/industrial)	High Very Close	None	0
Frequency of Community Events Annually. (High/Med/Low)	High	None	0
Existing Passenger Train Volumes (2018)	72	OPTION 1A	2
Presence of Unit Trains? (Yes/No)	Yes	OPTION 1A	2
SUBTOTAL SCORE			6
ESTIMATED PLANNING COST	Range	\$100,000 - \$200,000	\$ 150,000
COST OF IMPROVEMENTS BENEFIT-COST INDEX			40
TRAIN NOISE GROUP			
Current Quiet Zone? (Yes/No)	No	None	0
Wayside Horns (Yes/No)	Yes	None	0
Existing Train Volumes (2018)	72	None	0
Number of Countermeasures Needed for Quiet Zone Application.	2	None	0
SUBTOTAL SCORE			0
ESTIMATED PLANNING COST	Range	\$100,000 - \$200,000	\$ 150,000
COST OF IMPROVEMENTS BENEFIT-COST INDEX			0
COMMUNITY IDENTIFIED PRIORITY			
Is there a negative impact on local community with improvements? (Yes/No)	No	None	0
Is there a current public safety need? (Yes/No)	No	None	0
Is there expected land use growth to 2040? (High/Medium/Low)	Medium	OPTION 1A	2
Are there existing pedestrian and bicycle needs? (Yes/No)	No	None	0
Have the public voiced public needs? (Yes/No)	Yes	OPTION 1A	2
Are there opportunities for land use grown with the improvement? (Yes/No)	No	None	0
Does the improvement provide route continuity and improved circulation to any mode?	No	None	0
Does the improvement contribute to opportunities for future non motorized trails?	No	None	0
SUBTOTAL SCORE			4
ESTIMATED PLANNING COST	Range	\$100,000 - \$200,000	\$ 150,000
COST OF IMPROVEMENTS BENEFIT-COST INDEX			26.7
TOTAL BENEFIT POINTS			23
TOTAL COST-BENEFIT INDEX		153.3	



Rail Crossing Options- McCarver St

Another Train Coming Signage

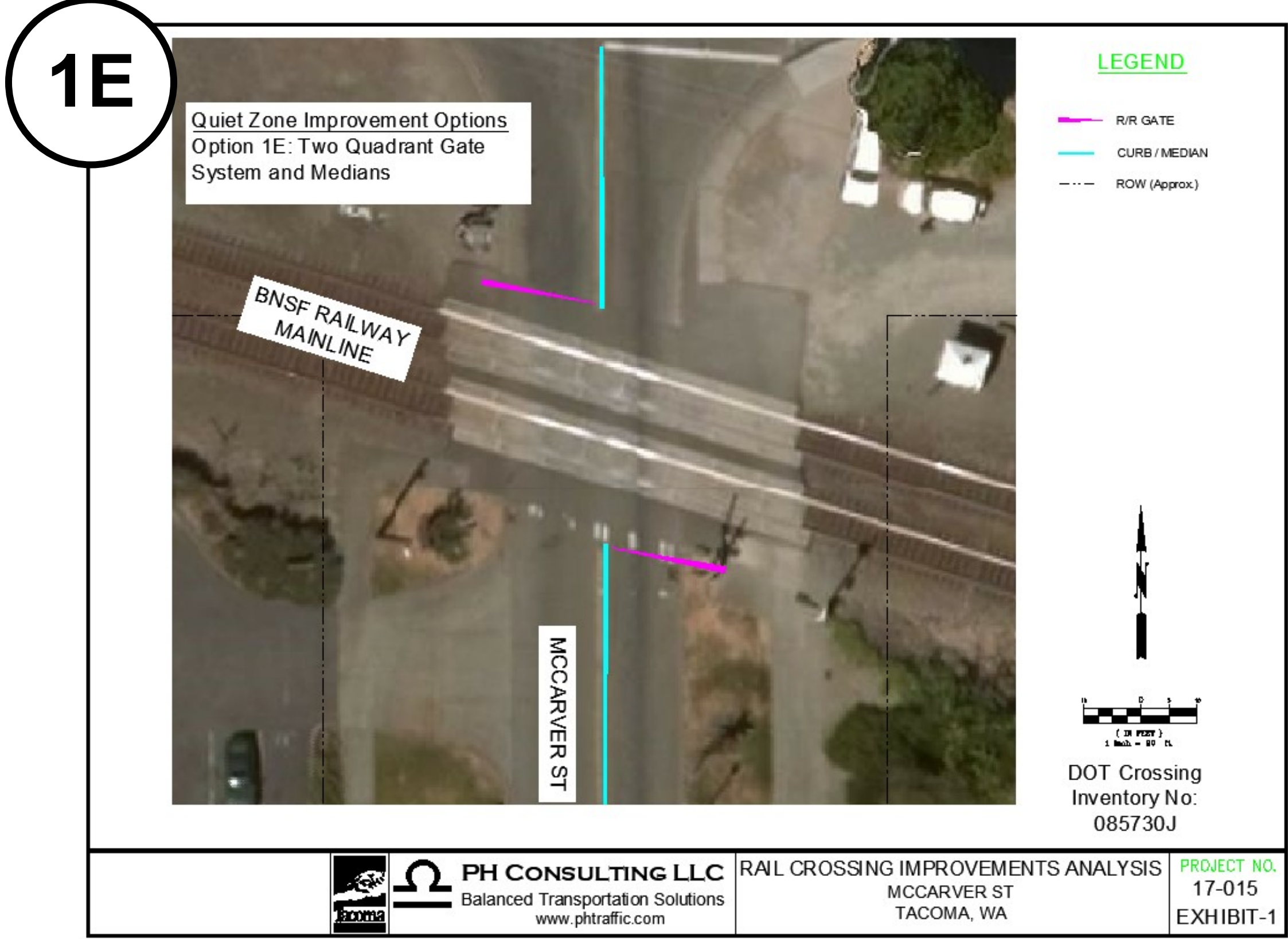


- Electronic additional train warning signs at the approaches, hard wired, and interconnected.



Example of "Another Train Coming" warning signs.

2 Quad Gates & Medians (Quiet Zone)

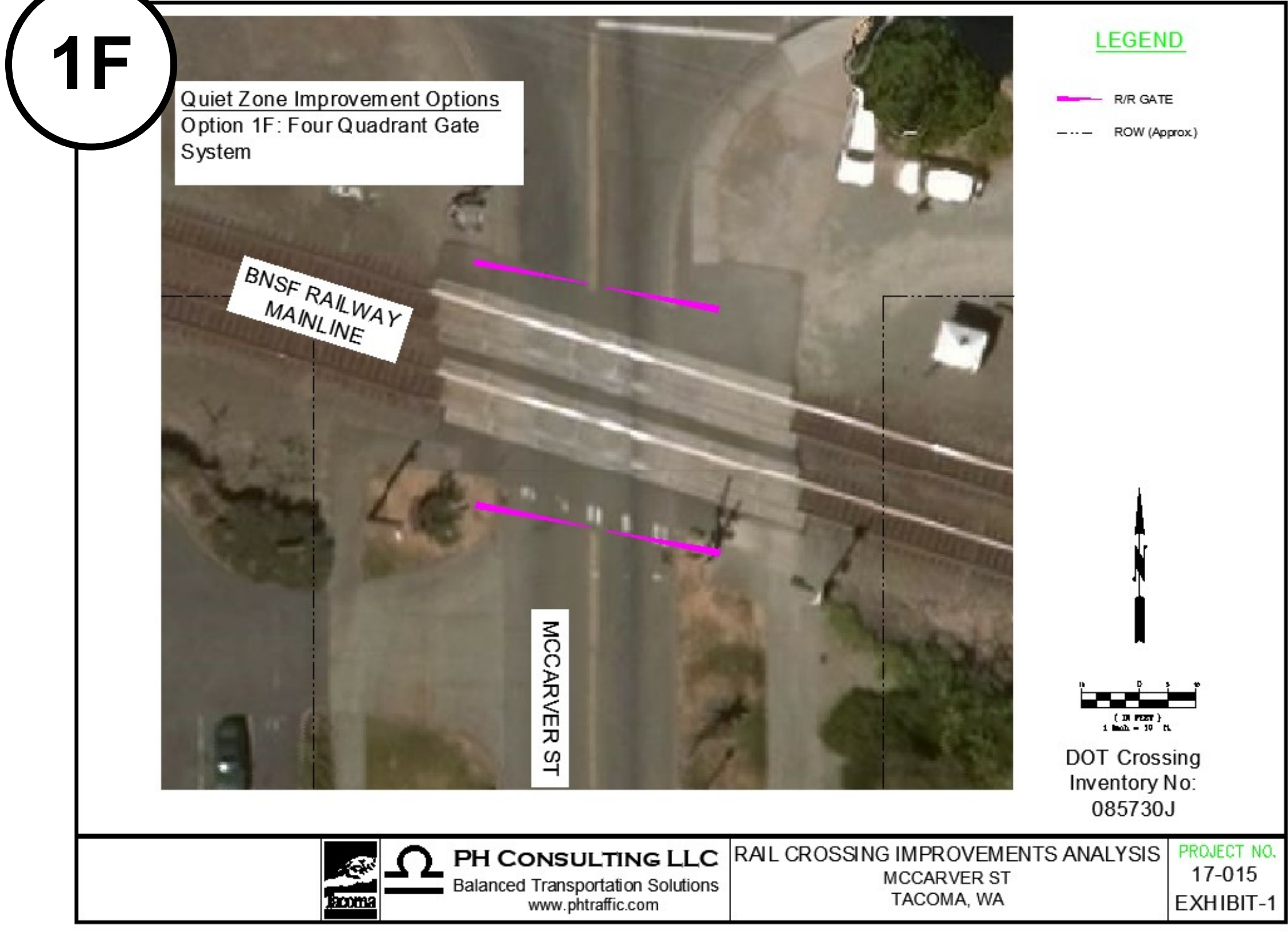


- Two Quadrant Gate System.
- 130' of median and channelization devices.
- Property impacts.



Example of 2 quadrant gates and medians.

4 Quad Gates (Quiet Zone)



- Four Quadrant Gates.



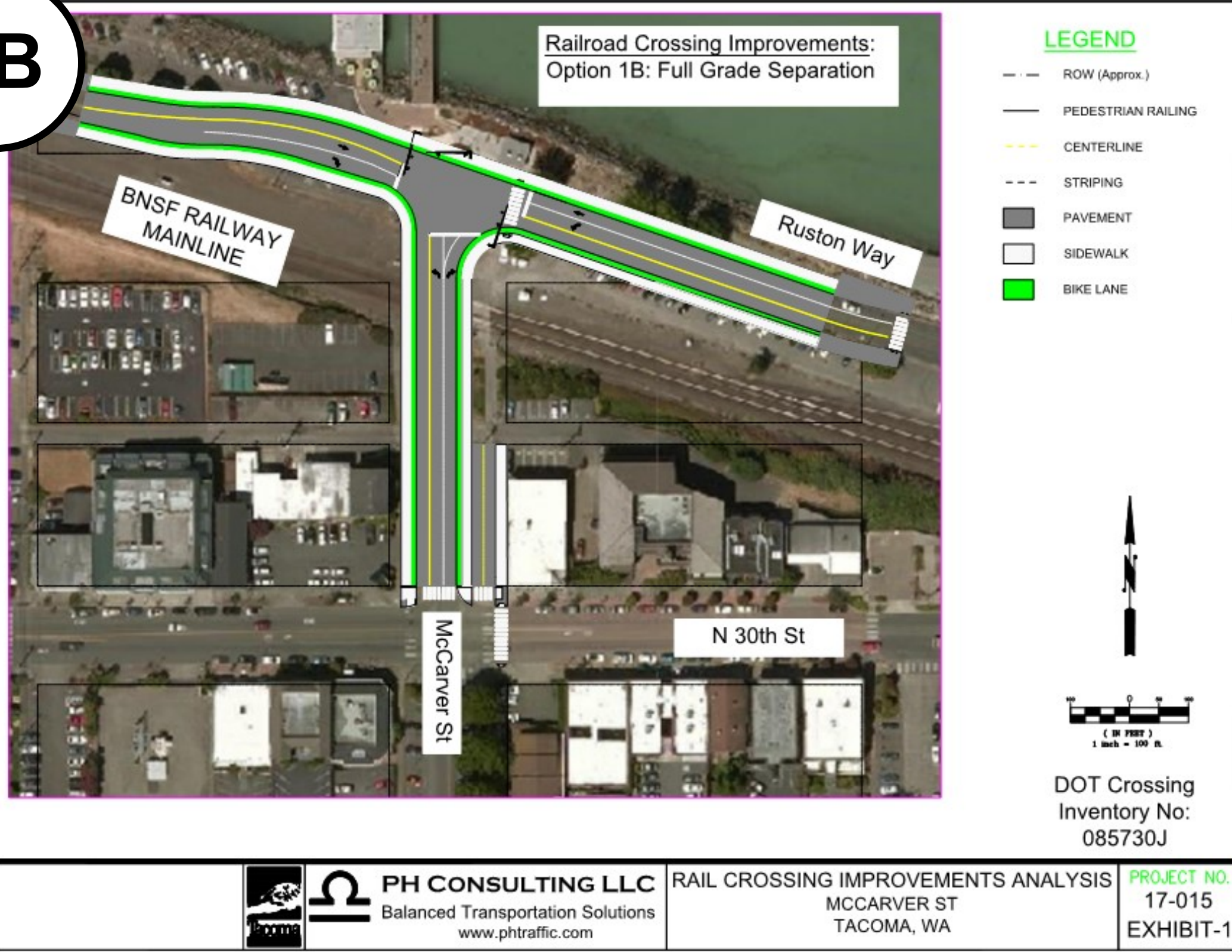
Example of 4 quadrant gates.



Rail Crossing Options- McCarver St

Full Grade Separation (Quiet Zone)

1B



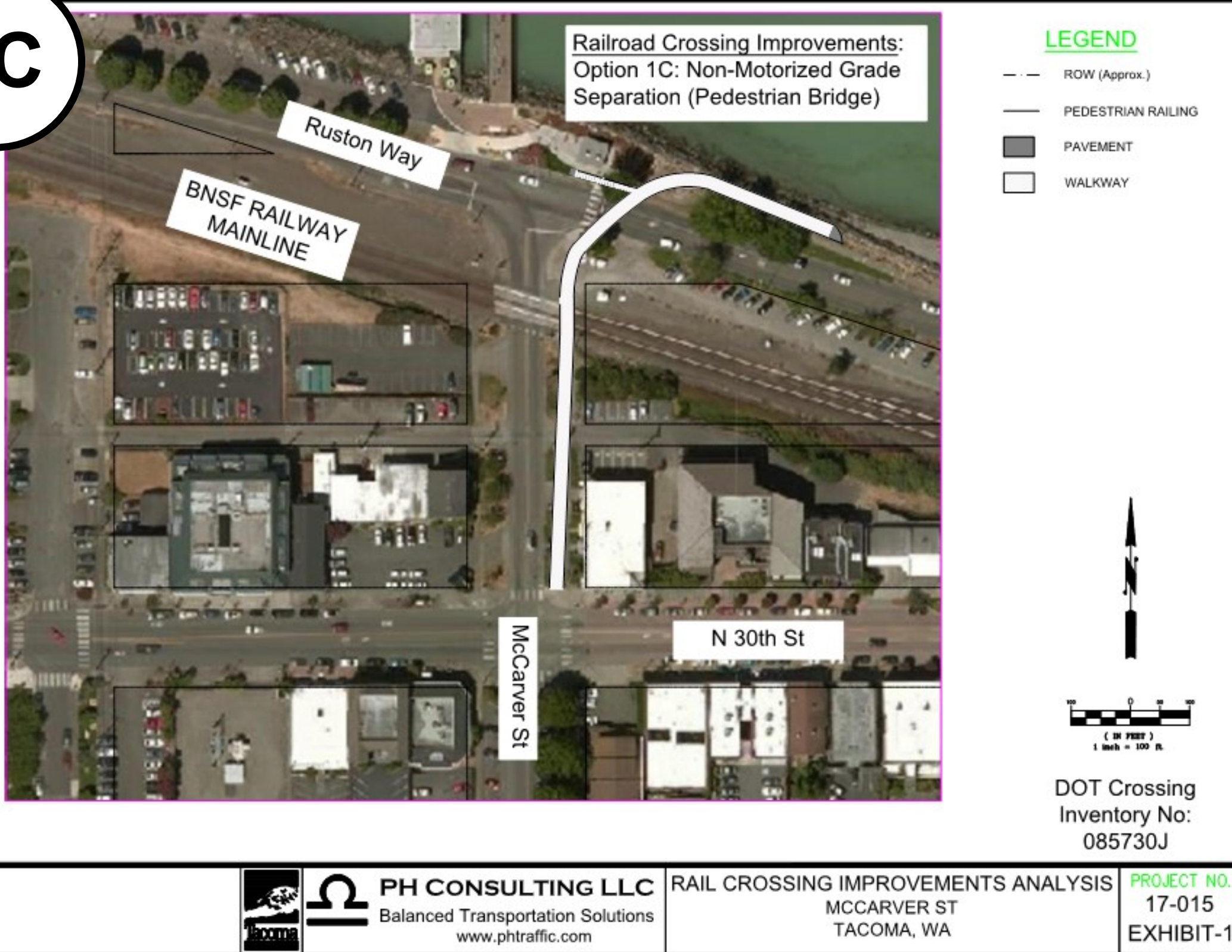
- Three lane grade separation, three approach, elevated structure with bike and pedestrian facilities (60' wide).
- Access road to maintain business accesses.
- Rail crossing closure.
- New signal.
- Improvements to 30th Street intersection.
- Property impacts.



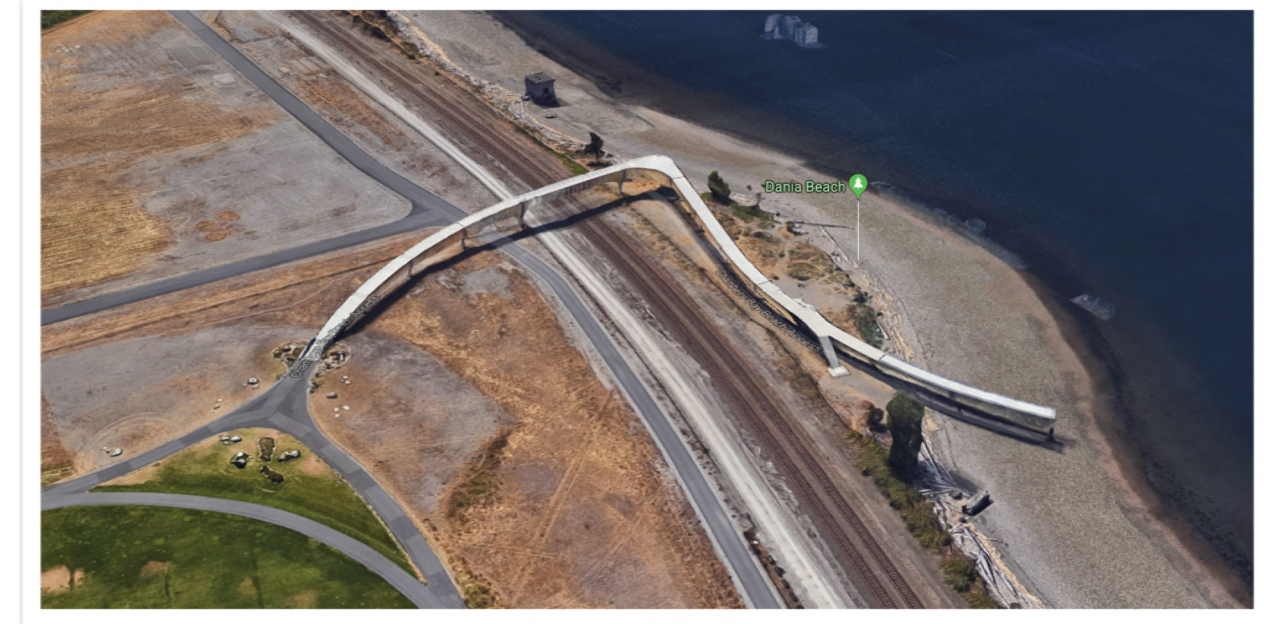
Example of a tri-bridge.

Non-Motorized Grade Separation with Ramps

1C



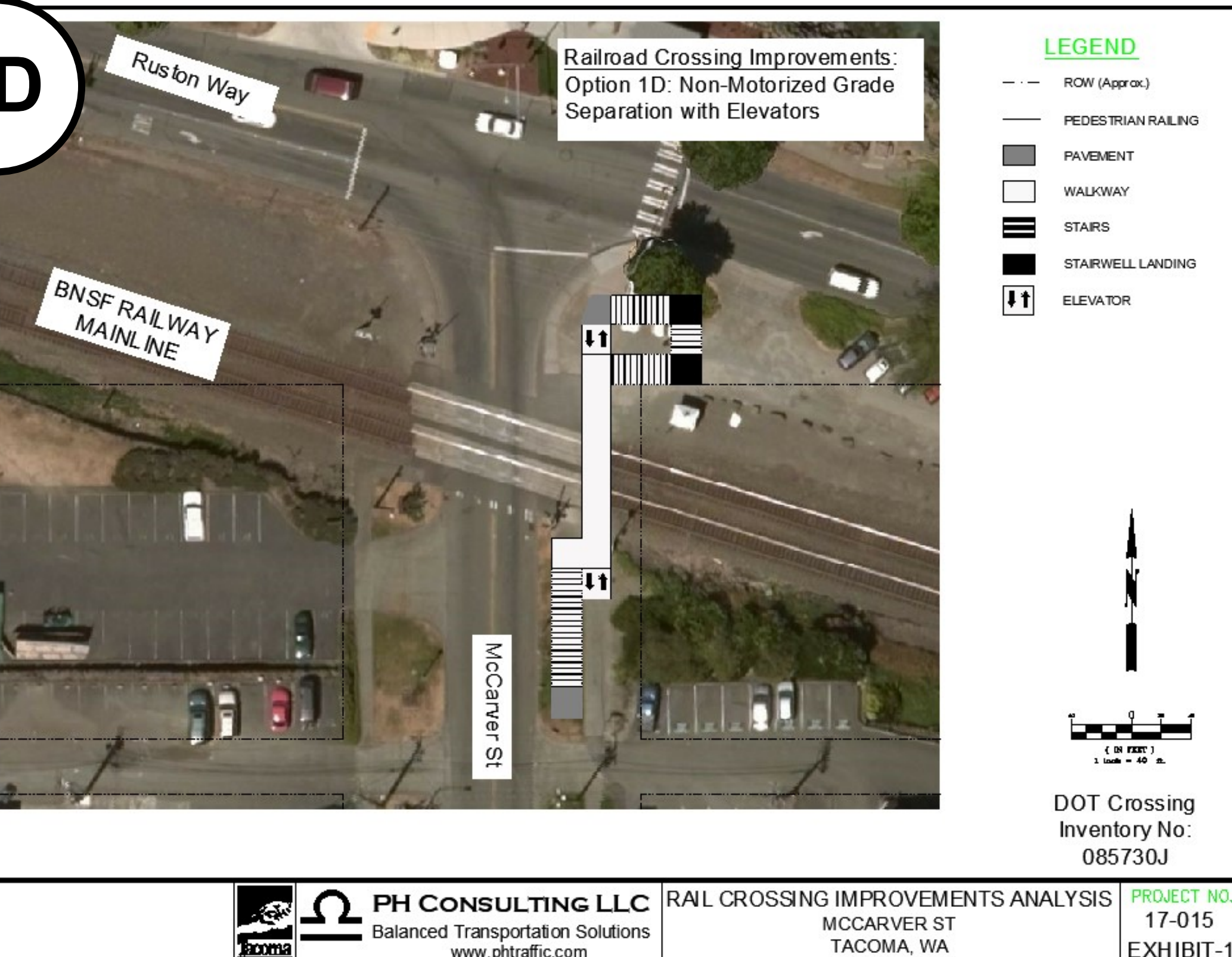
- Three leg approach with bike and pedestrian facilities (15' wide).
- Emergency stairs.
- Close pedestrian crossing.
- Property Impacts.



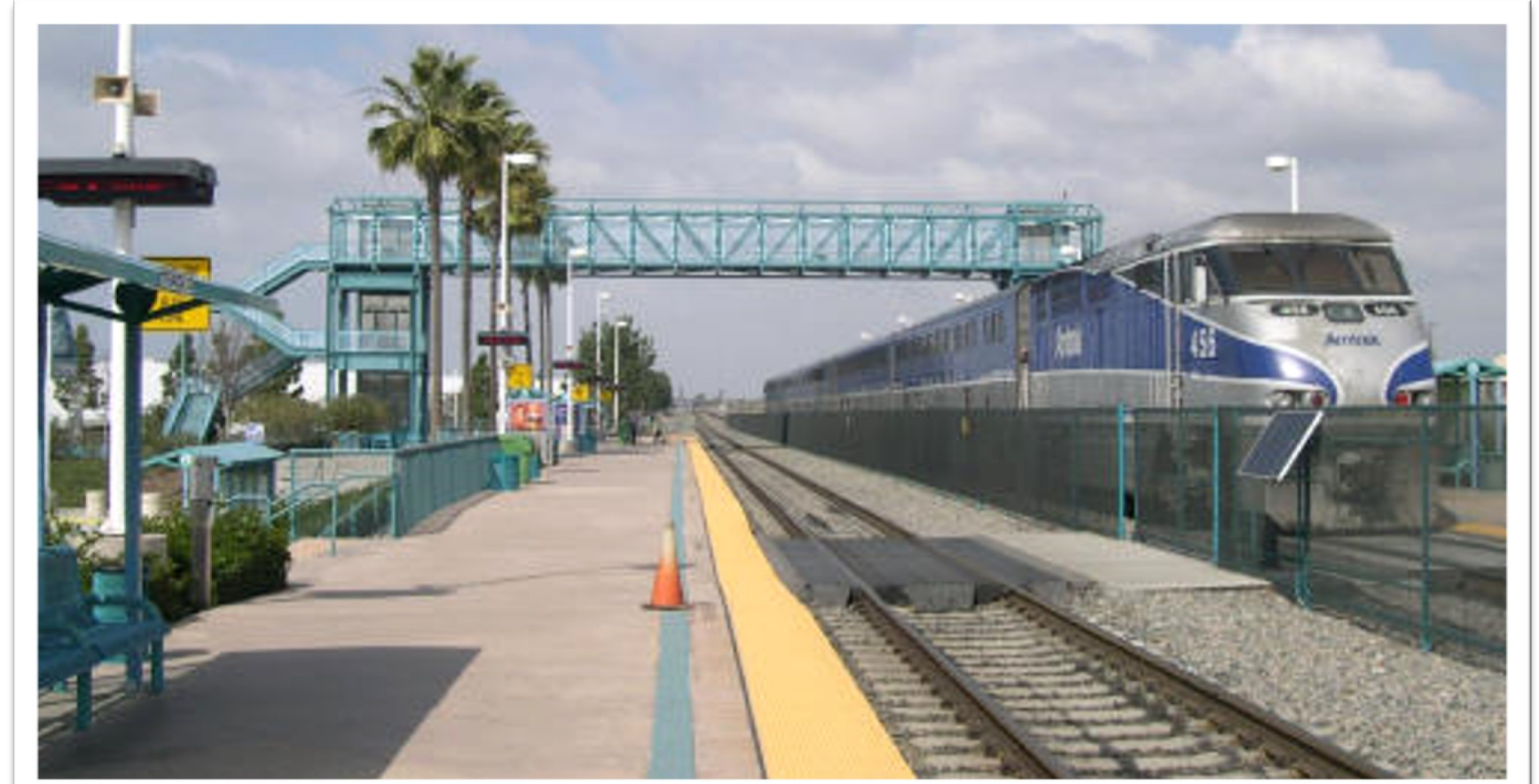
Example of a non-motorized grade separation pedestrian bridge.

Non-Motorized Grade Separation with Elevators

1D



- Elevators and stairs, two approaches with bike and pedestrian facilities, (15' wide) structure.
- Close pedestrian crossing.
- Property impacts.



Example of a non-motorized grade separation with elevators.



Rail Crossing Options - E D St

4 Quad Gates (Quiet Zone)

2A Quiet Zone Improvement Options
Option 2A: Four Quadrant Gate System

LEGEND

- R/R GATE
- FENCE
- CONCRETE RAIL PANEL
- SIDEWALK
- PEDESTRIAN ESCAPE GATE
- VEHICLE GATE
- ROW (Approx.)

DOT Crossing Inventory No: 396639A

PH CONSULTING LLC
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RAIL CROSSING IMPROVEMENTS ANALYSIS
EAST D STREET
TACOMA, WA

PROJECT NO. 17-015
EXHIBIT-2

- Signs.
- Concrete Sidewalk.
- Emergency Exit Gates.
- Detectable Warning.
- Concrete Crossing Panels.
- Convert to Four Quadrant Gates.
- Property impacts.



Example of 4 quadrant gates.

2 Quad Gates & Medians (Quiet Zone)

2B Quiet Zone Improvement Options
Option 2B: Two Quadrant Gate System and Medians

LEGEND

- R/R GATE
- FENCE
- CURB / MEDIAN
- CONCRETE RAIL PANEL
- SIDEWALK
- PEDESTRIAN ESCAPE GATE
- VEHICLE GATE
- ROW (Approx.)

DOT Crossing Inventory No: 396639A

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RAIL CROSSING IMPROVEMENTS ANALYSIS
EAST D STREET
TACOMA, WA

PROJECT NO. 17-015
EXHIBIT-2

- Signs.
- Concrete Sidewalk.
- Emergency Exit Gates.
- Detectable Warning.
- Concrete Crossing Panels.
- Medians.
- Property impacts.



Example of a median in front of a railroad crossing.

E D St Closure (Quiet Zone)

2F Quiet Zone Improvement Options
Option 2F: E D St Closure

LEGEND

- FENCE
- LANDSCAPE MEDIAN BARRIER
- ROW (Approx.)

ROAD CLOSED

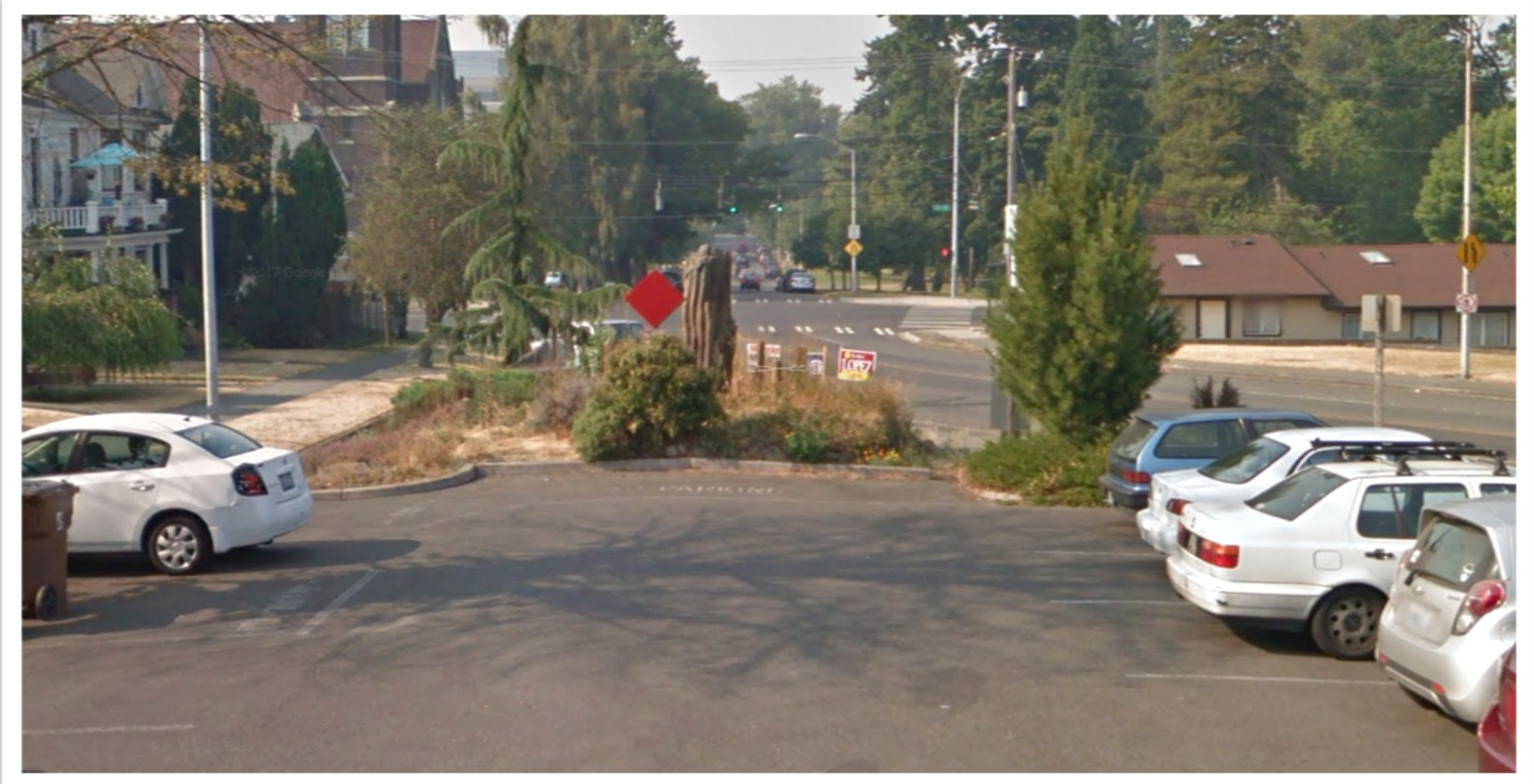
DOT Crossing Inventory No: 396639A

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RAIL CROSSING IMPROVEMENTS ANALYSIS
EAST D STREET
TACOMA, WA

PROJECT NO. 17-015
EXHIBIT-2

- Landscape median barrier.
- Fencing.



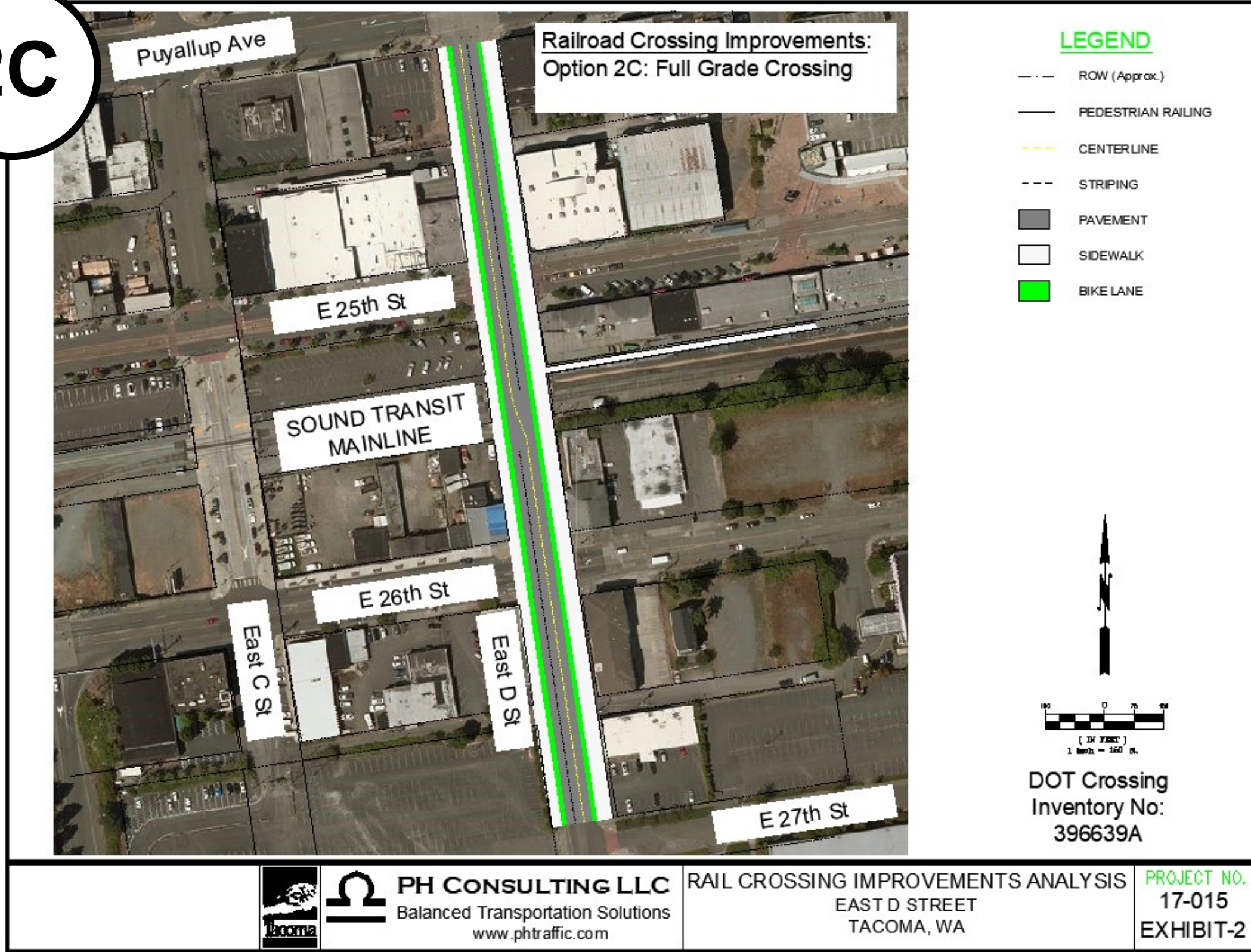
Example of a road closure.



Rail Crossing Options - E D St

Full Grade Separation (Quiet Zone)

2C



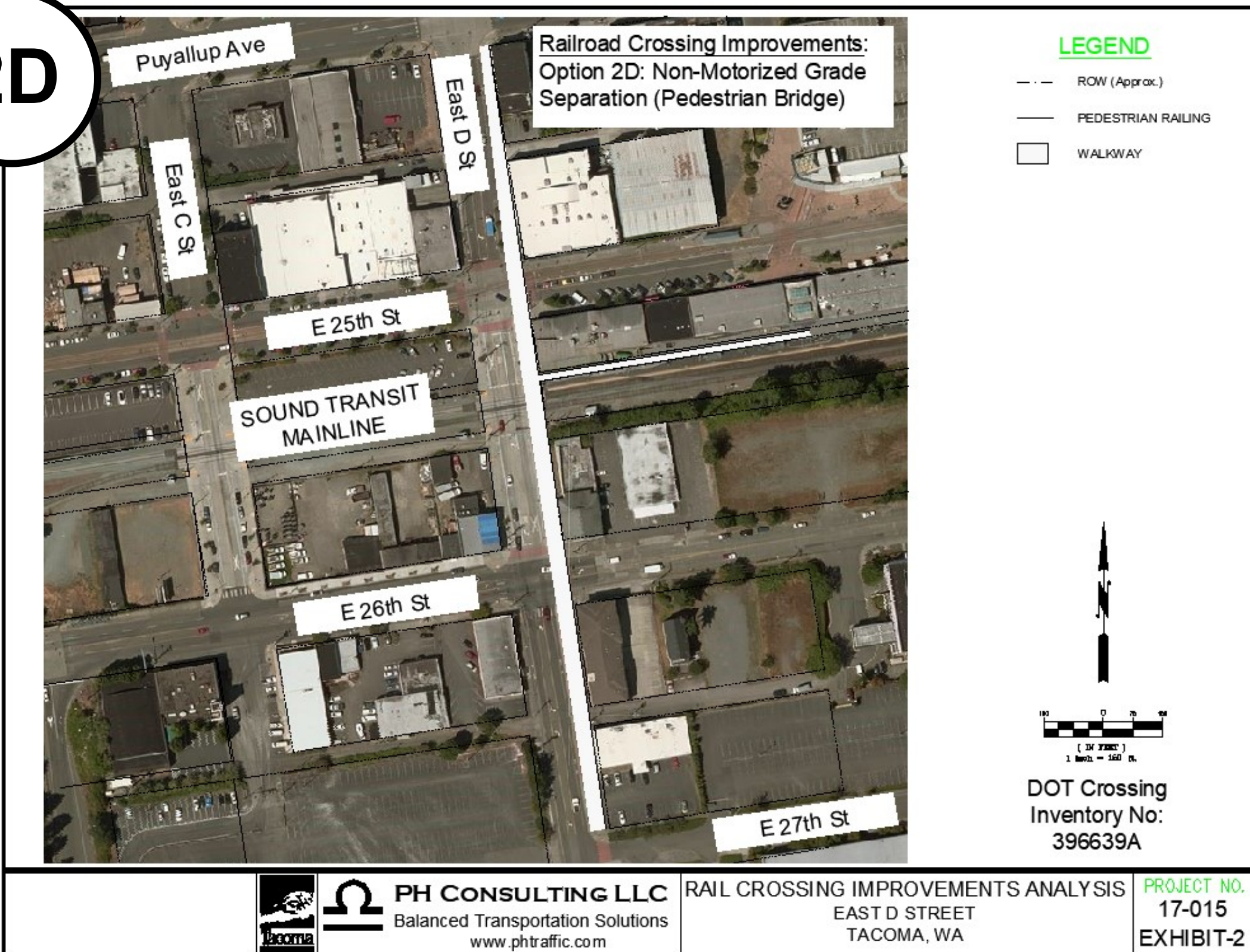
- Five lane grade separation, two approach, elevated structure with bike and pedestrian facilities. (100' wide) Approach begins at E 27th St and ends at Puyallup Ave, bridge deck clears surface street intersections E 26th and E 25th St.
- Rail crossing closure.
- Property impacts.



Example of a full grade separation.

Non-Motorized Grade Separation with Ramps

2D



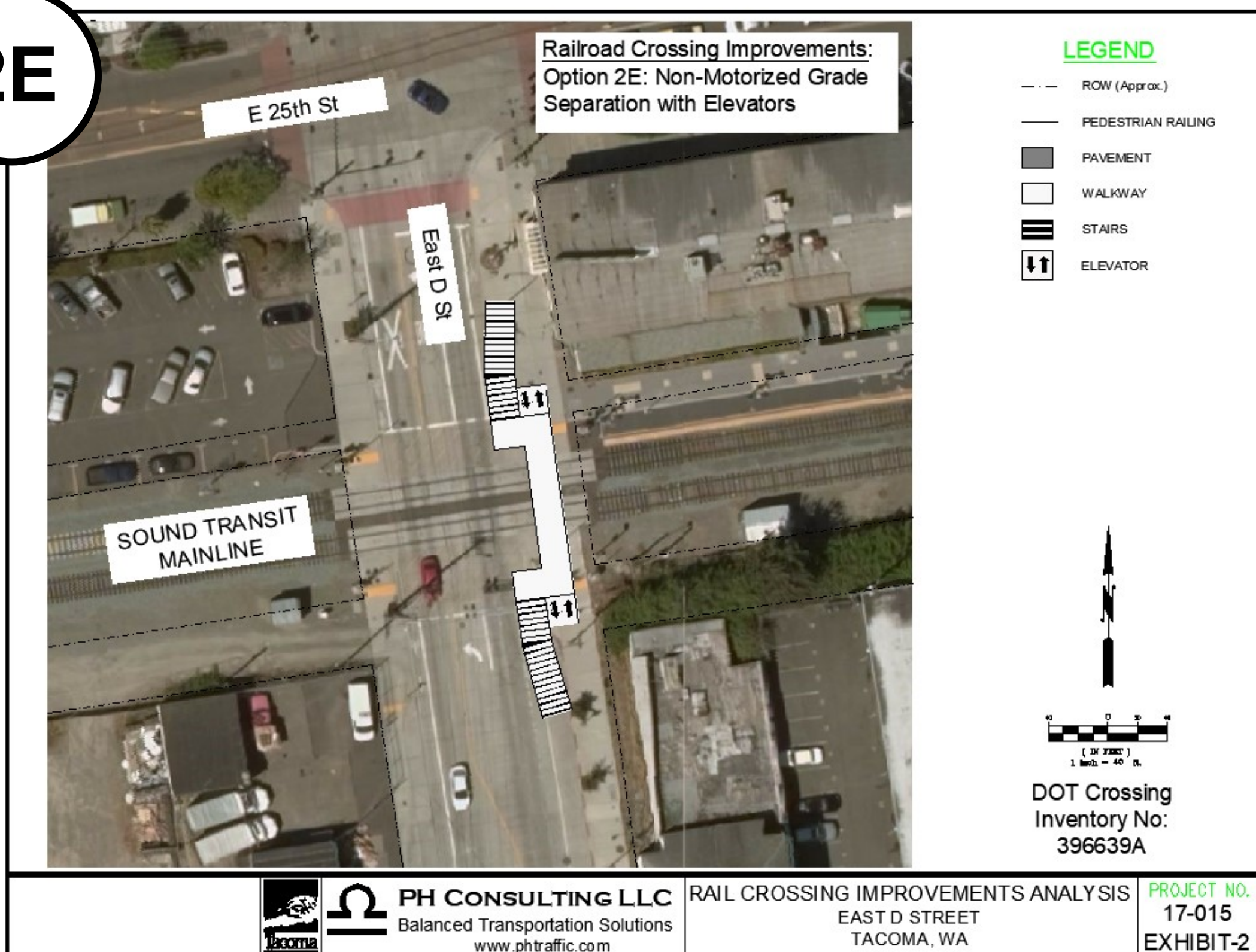
- Grade separation, two approach, elevated structure with bike and pedestrian facilities (15' wide). Approach begins at E 27th St and ends at Puyallup Ave, bridge deck clears surface street intersections E 26th and E 25th St.
- Close pedestrian crossing.
- Property impacts.



Example of a non-motorized grade separation pedestrian bridge .

Non-Motorized Grade Separation with Elevators

2E



- Elevators and stairs, with two approaches for bike & pedestrian facilities (15' wide) structure.
- Close pedestrian crossing.
- Property impacts.



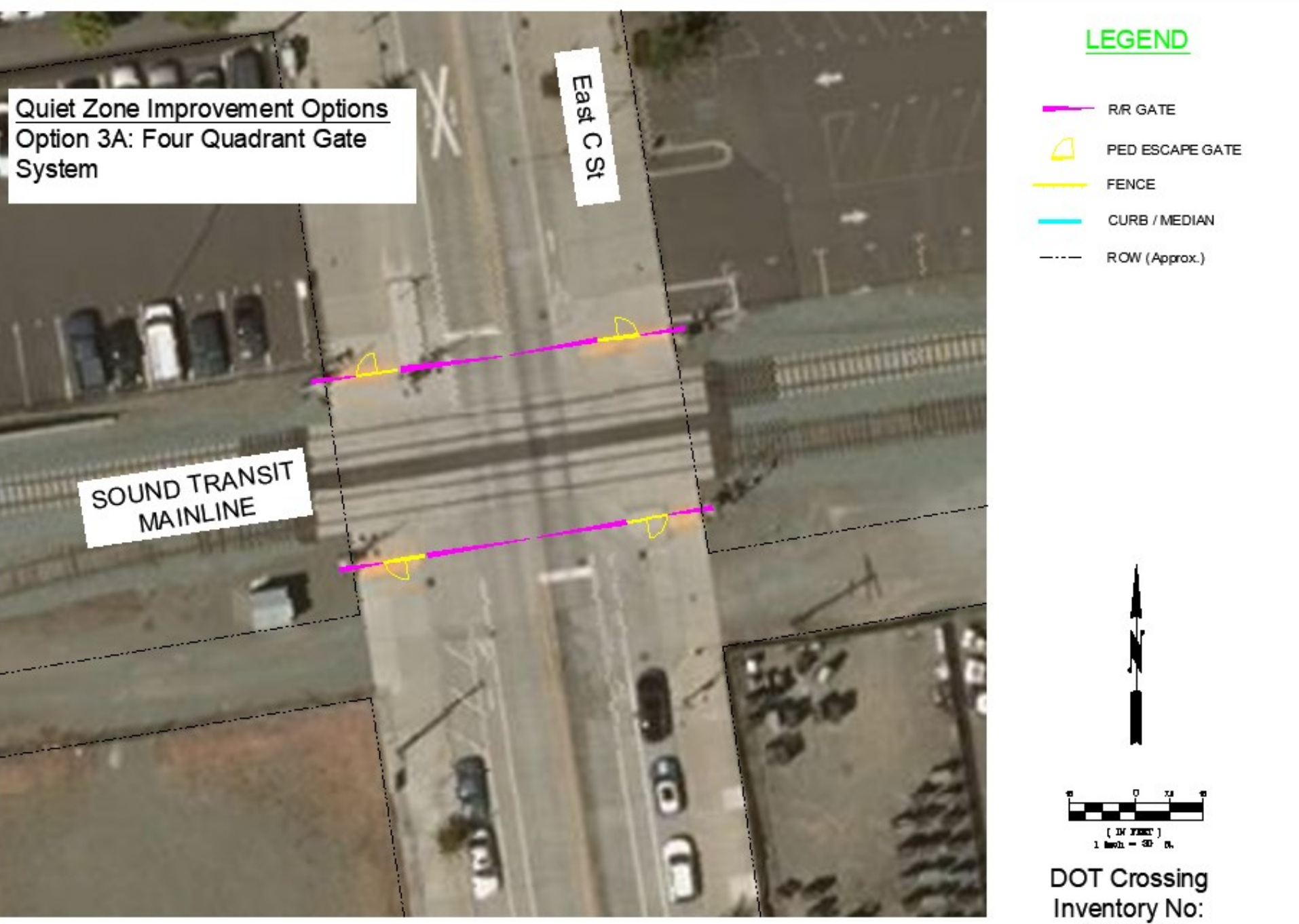
Example of a non-motorized grade separation pedestrian bridge with elevators.



Rail Crossing Options - E C St

4 Quad Gates (Quiet Zone)

3A



Quiet Zone Improvement Options
Option 3A: Four Quadrant Gate System

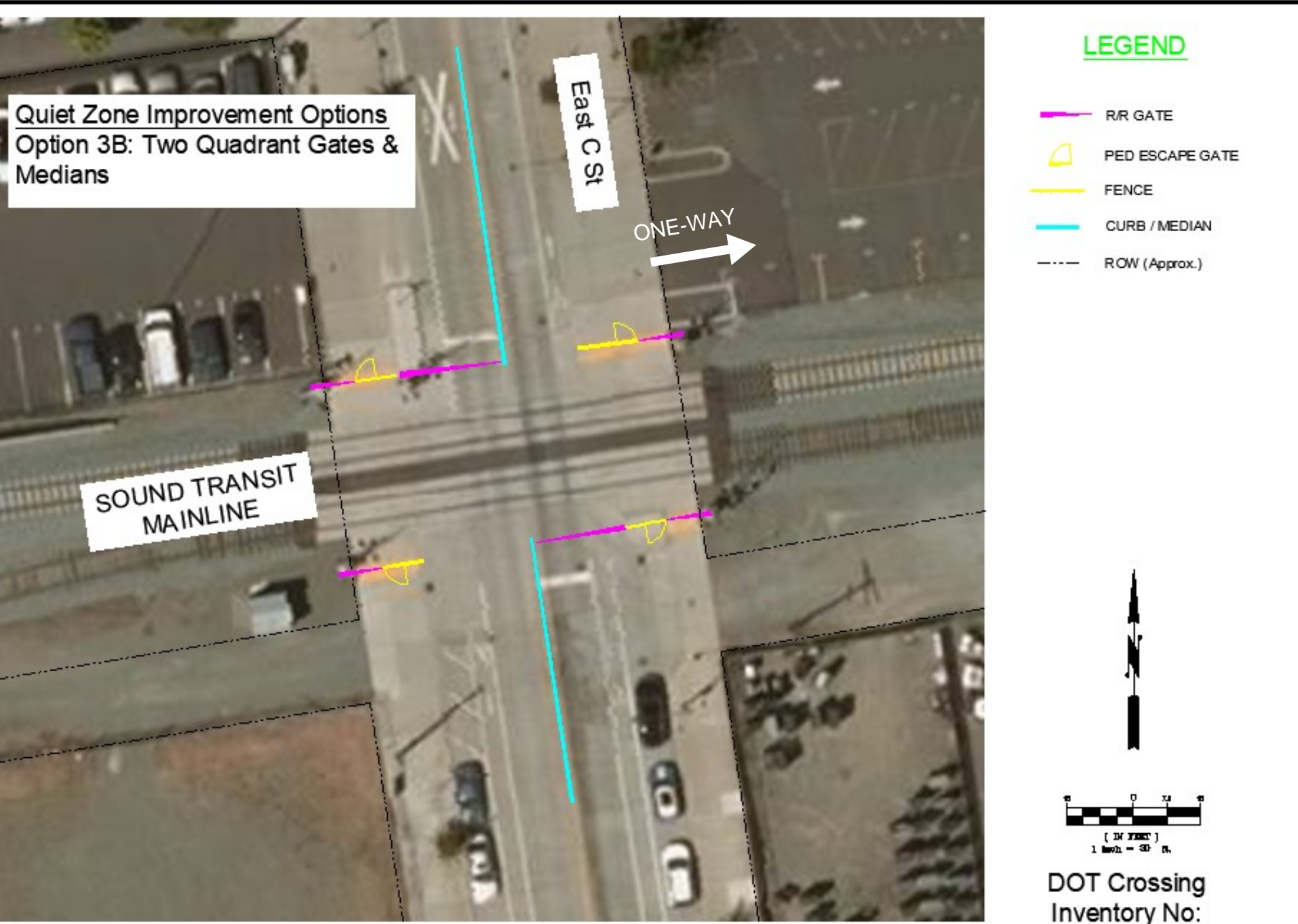
- Signs.
- Concrete Sidewalk.
- Emergency Exit Gates.
- Detectable Warning.
- Convert to Four Quadrant Gate.



Example of 4 quadrant gates.

2 Quad Gates & Medians (Quiet Zone)

3B



Quiet Zone Improvement Options
Option 3B: Two Quadrant Gates & Medians

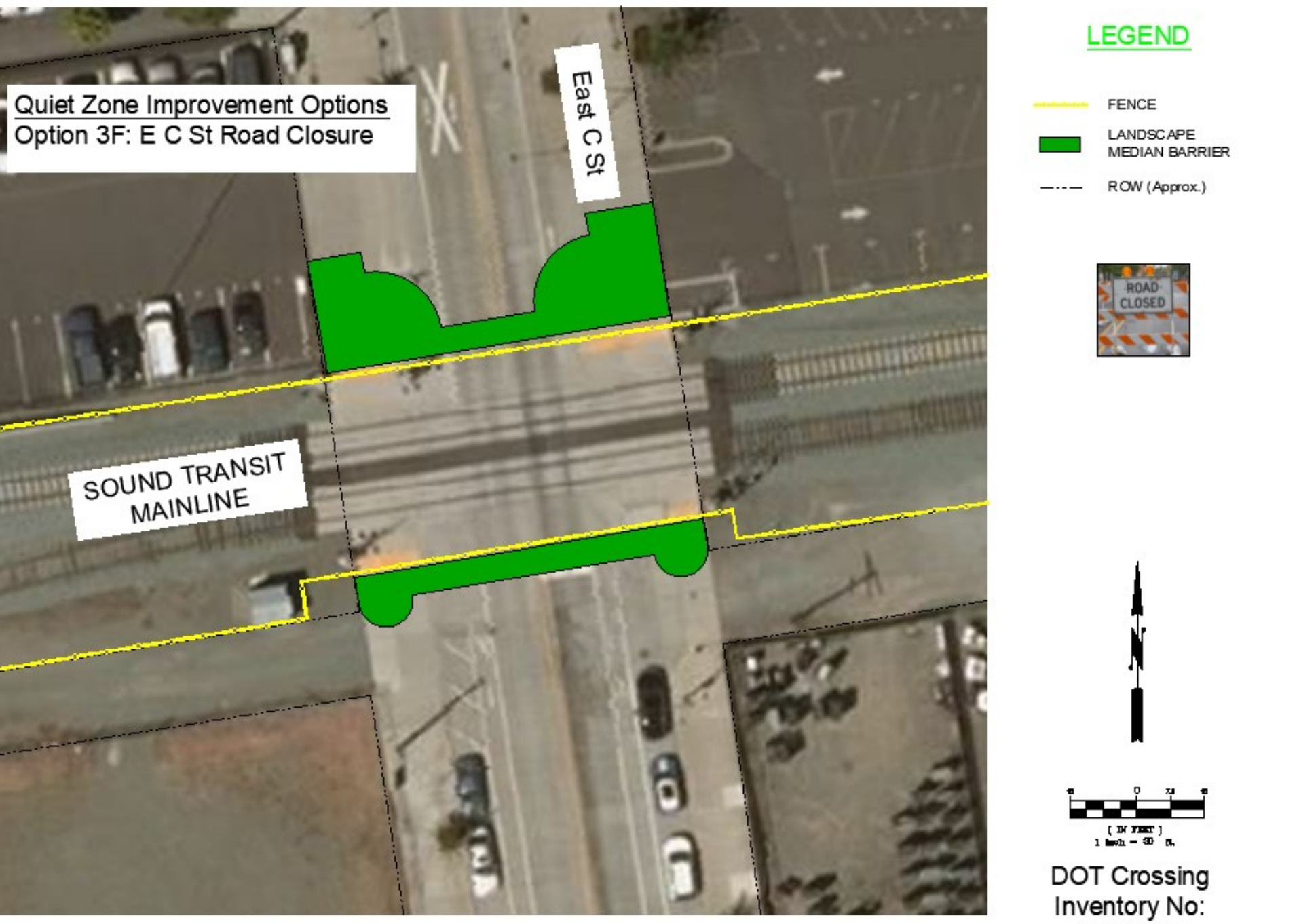
- Signs.
- Concrete Sidewalk.
- Emergency Exit Gates.
- Detectable Warning.
- Pedestrian Gates.
- Medians.



Example of a median in front of a railroad crossing.

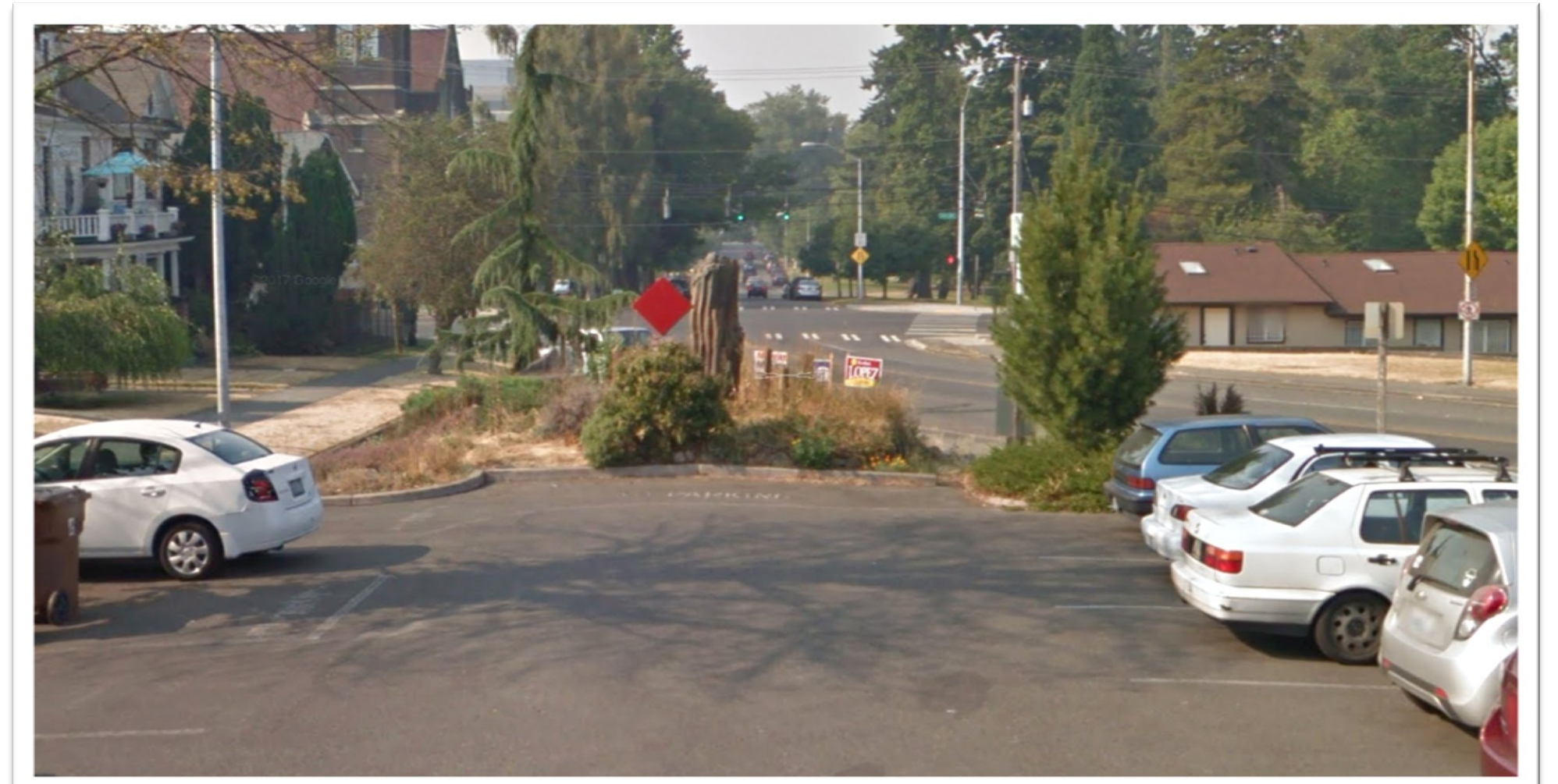
E C St Closure (Quiet Zone)

3F



Quiet Zone Improvement Options
Option 3F: E C St Road Closure

- Landscape median barrier.
- Fencing.



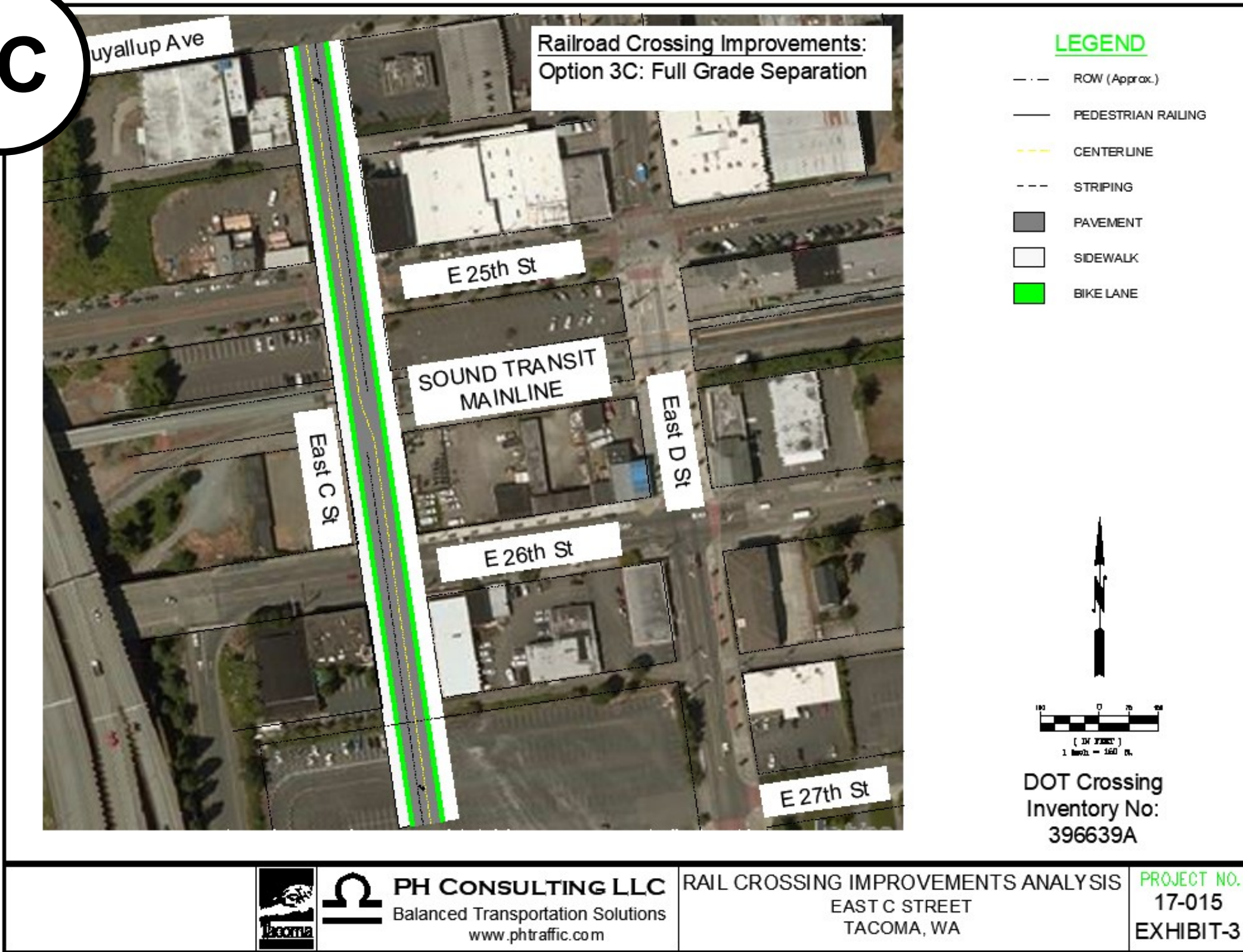
Example of a road closure.



Rail Crossing Options - E C St

Full Grade Separation (Quiet Zone)

3C



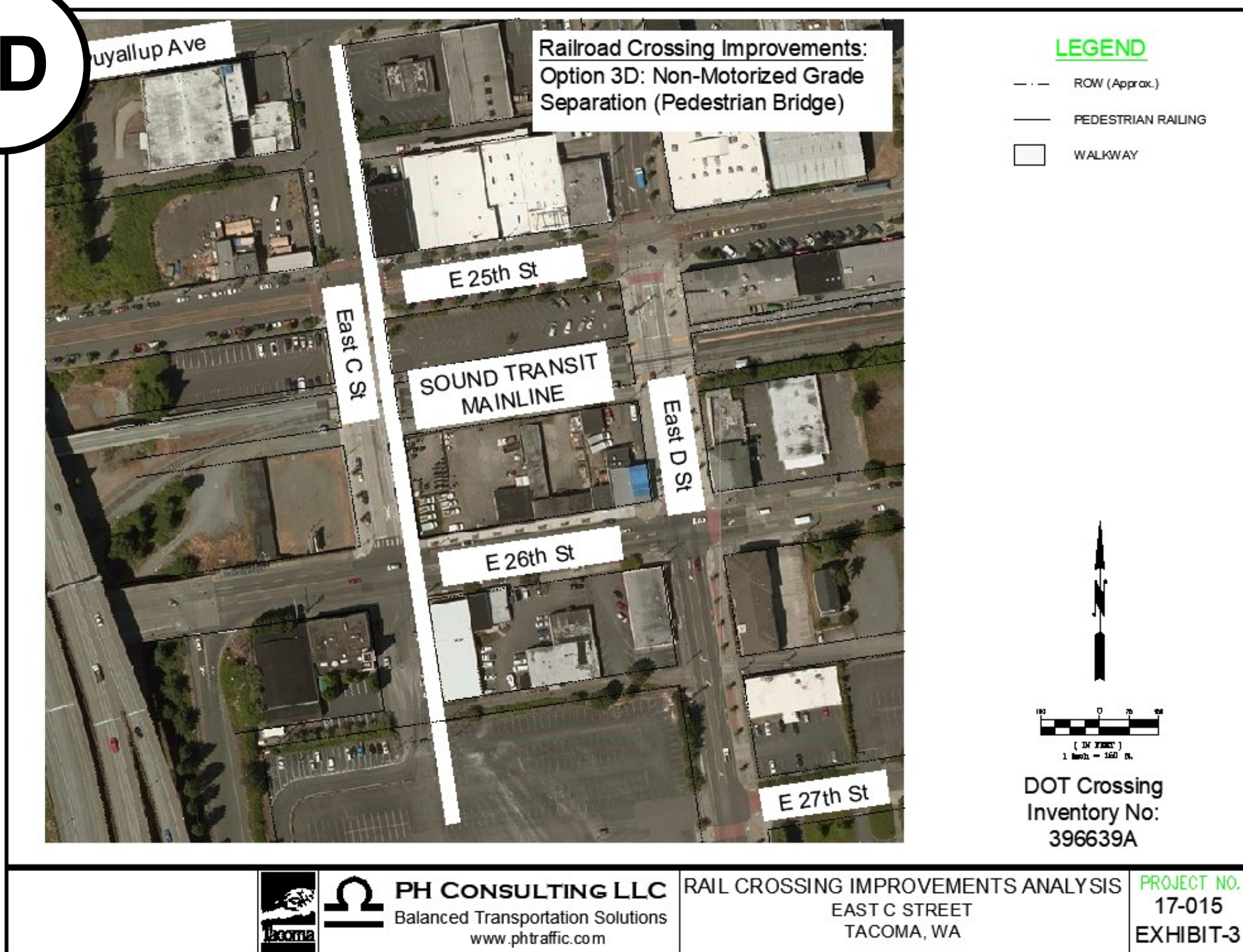
- Five lane grade separation, two approach, elevated structure with bike and pedestrian facilities (100' wide). Approach begin E 27th St and End Puyallup Ave, Bridge Deck clears surface street intersections E 26th and E 25th St.
- Rail crossing closure.
- Property impacts.



Example of a full grade separation.

Non-Motorized Grade Separation with Ramps

3D



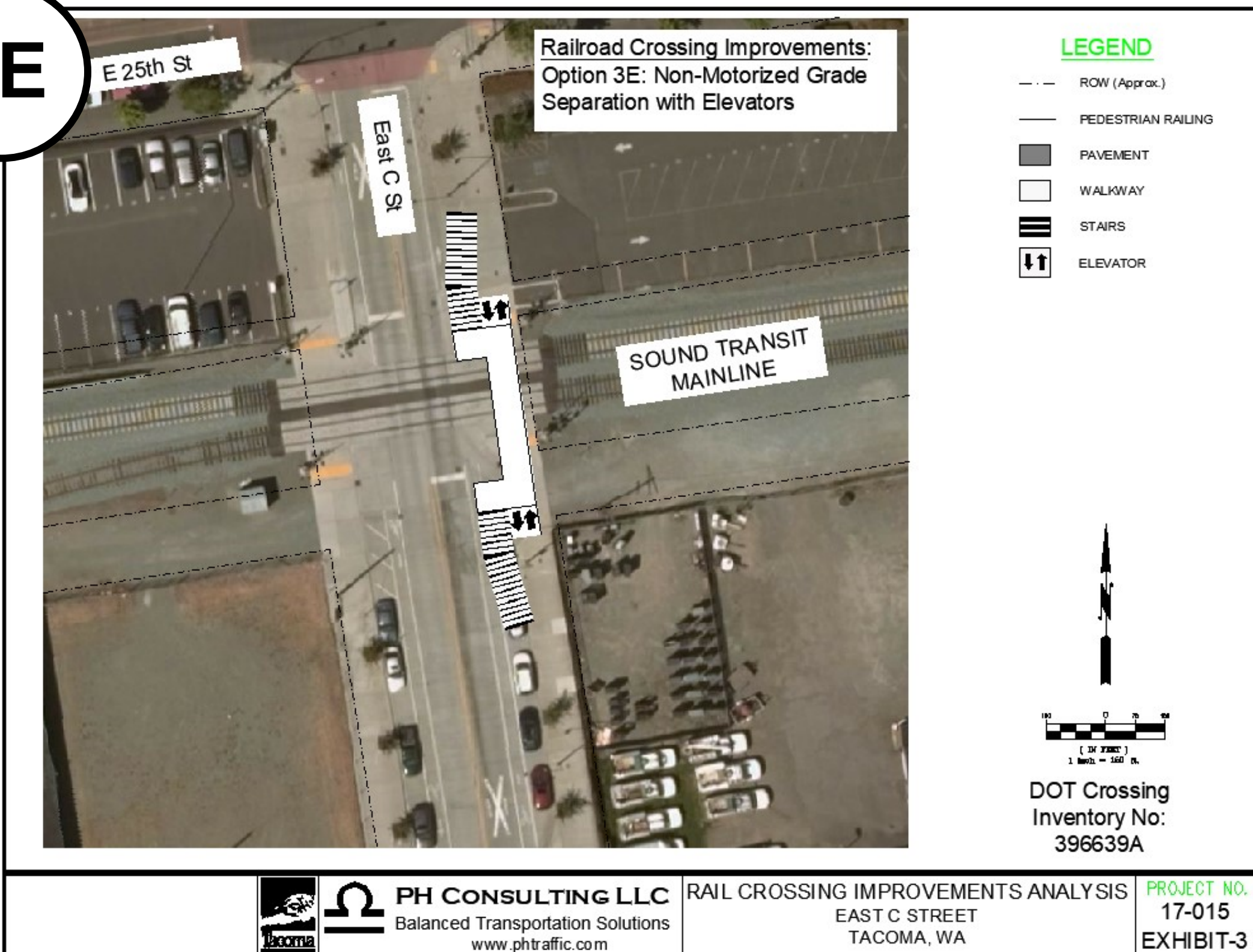
- Grade separation, two approach, elevated structure with bike and pedestrian facilities. (15' wide) Approach begin E 27th St and End Puyallup Ave, Bridge Deck clears surface street intersections E 26th and E 25th St.
- Close pedestrian crossing.
- Property impacts.



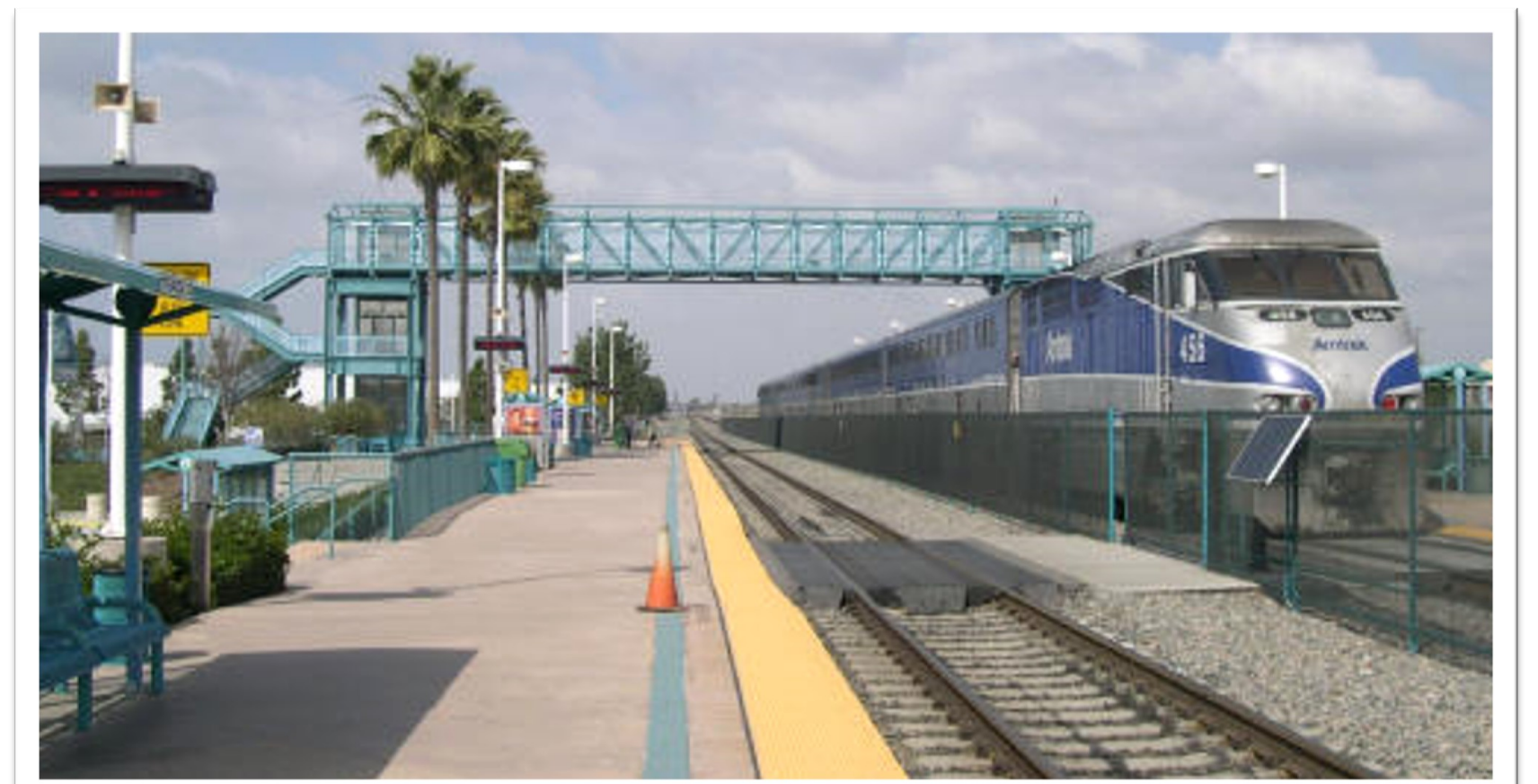
Example of a non-motorized grade separation pedestrian bridge .

Non-Motorized Grade Separation with Elevators

3E



- Elevators and stairs, two approaches with bike and pedestrian facilities (15' wide) structure.
- Close pedestrian crossing.
- Property impacts.



Example of a non-motorized grade separation pedestrian bridge with elevators.



Rail Crossing Options - S C St

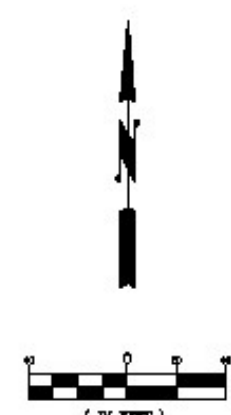
4 Quad Gates (Quiet Zone)

4A

Quiet Zone Improvement Options
Option 4A: Four Quadrant Gate System



- LEGEND**
- R/R GATE
 - PED ESCAPE GATE
 - FENCE
 - SIDEWALK
 - ROW (Approx.)



DOT Crossing
Inventory No:
945989J

- Signs.
- Emergency Exit Gates.
- Metal Fencing Barrier.
- Convert to Four Quadrant Gate.



Example of 4 quadrant gates.

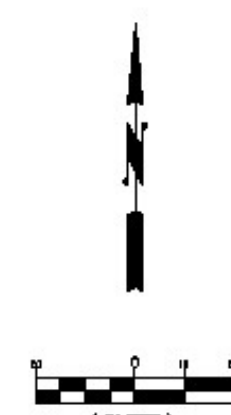
2 Quad Gates & Medians (Quiet Zone)

4B

Quiet Zone Improvement Options
Option 4B: 2 Quadrant Gates & Medians



- LEGEND**
- CURB / MEDIAN
 - R/R GATE
 - PED ESCAPE GATE
 - FENCE
 - SIDEWALK
 - ROW (Approx.)



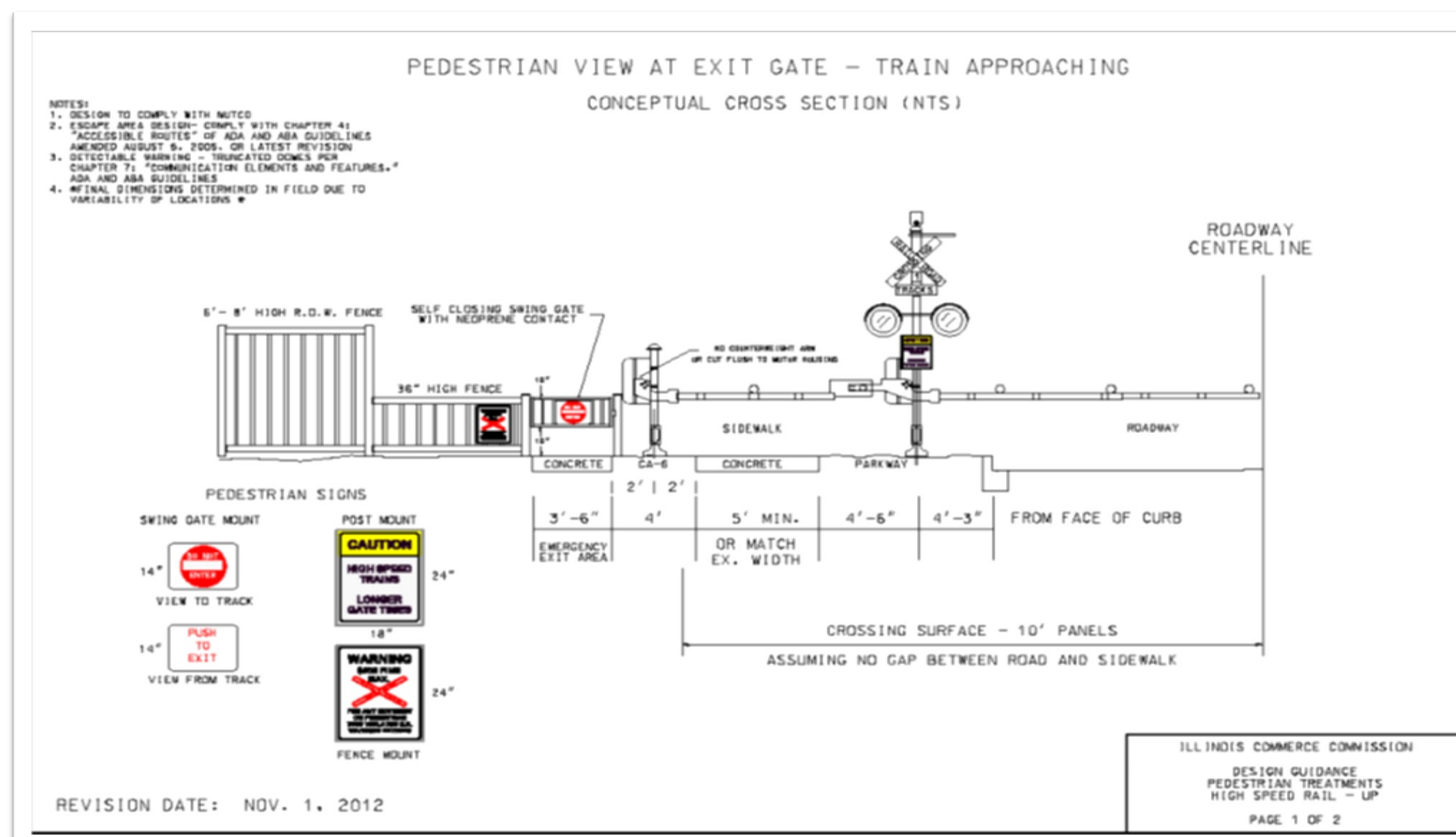
DOT Crossing
Inventory No:
945989J

- Signs.
- Emergency Exit Gates.
- Medians, installed as channelization devices.

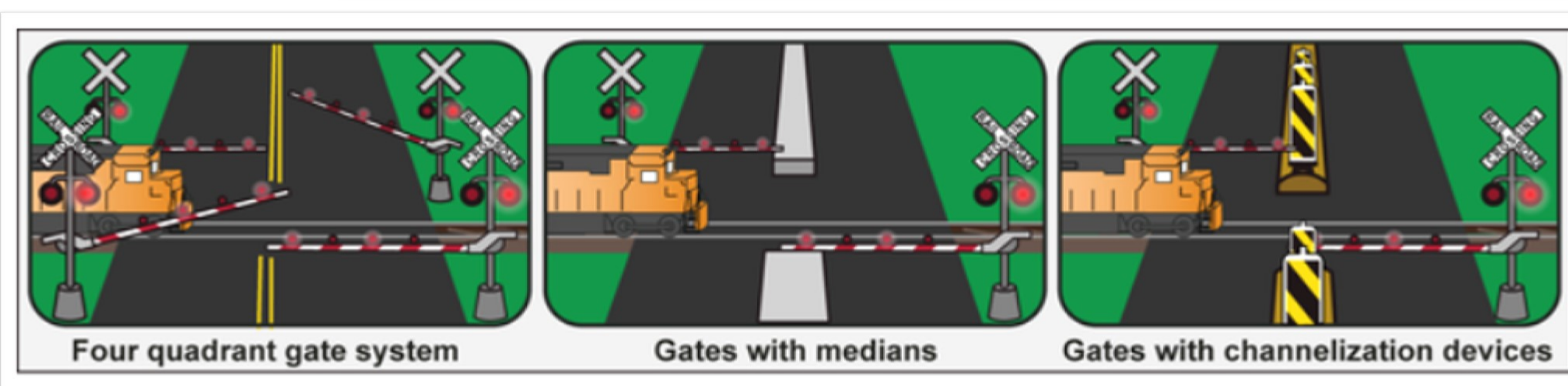


Example of a median in front of a railroad crossing.

Example of a railroad crossing with signage, a vehicular gate, pedestrian gate, escape gate, and fencing.



Example of vehicular and pedestrian gates.



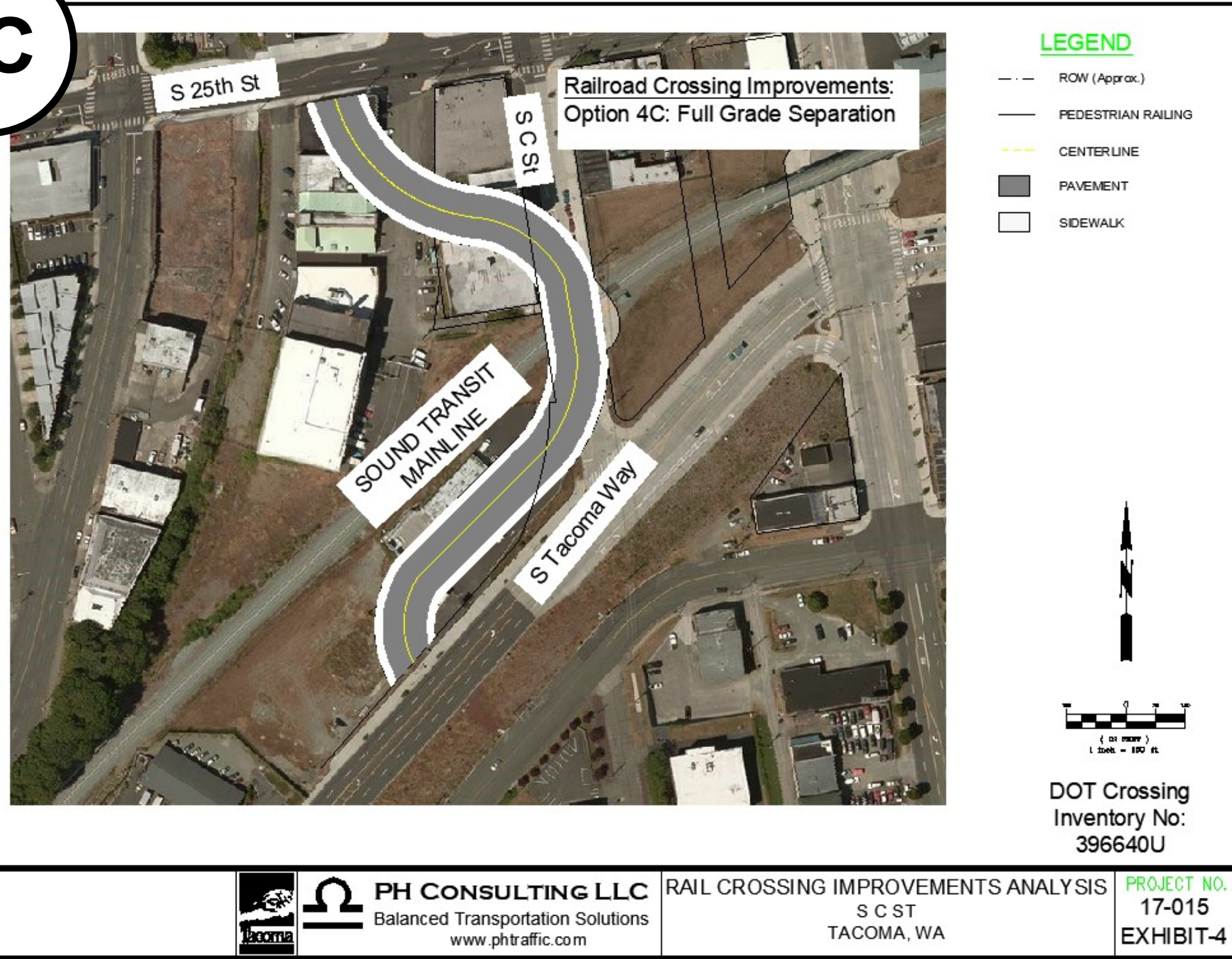
Comparison of quad gates, medians, and channelization devices.



Rail Crossing Options - S C St

Full Grade Separation (Quiet Zone)

4C



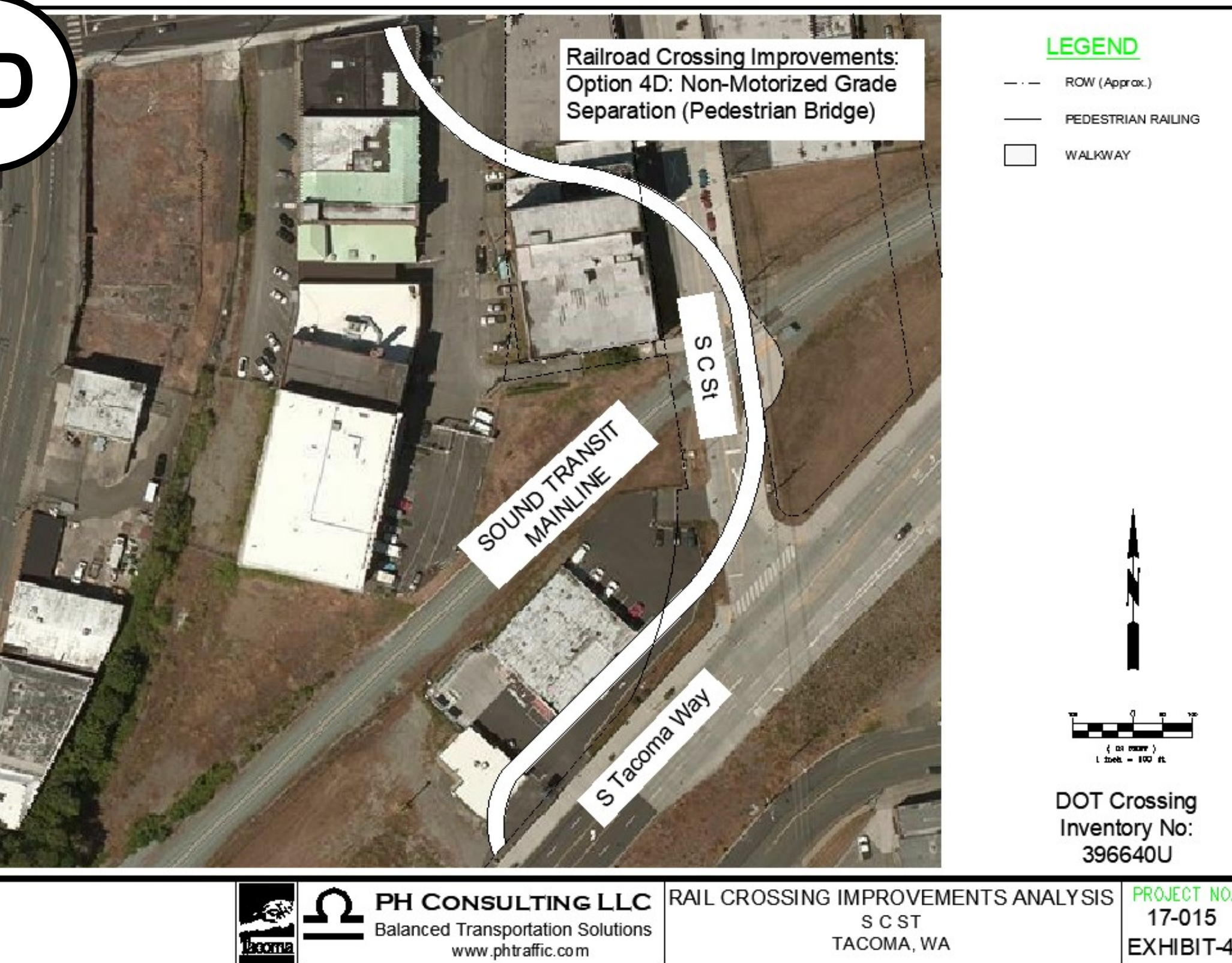
- 2 lane grade separation, two approach, elevated structure with bike and pedestrian facilities (36' wide). Approach mid-block begin S 25th St and mid-block South Tacoma Way.
- Rail crossing closure.
- Traffic Signals.
- Property impacts.



Example of a full grade separation.

Non-Motorized Grade Separation with Ramps

4D



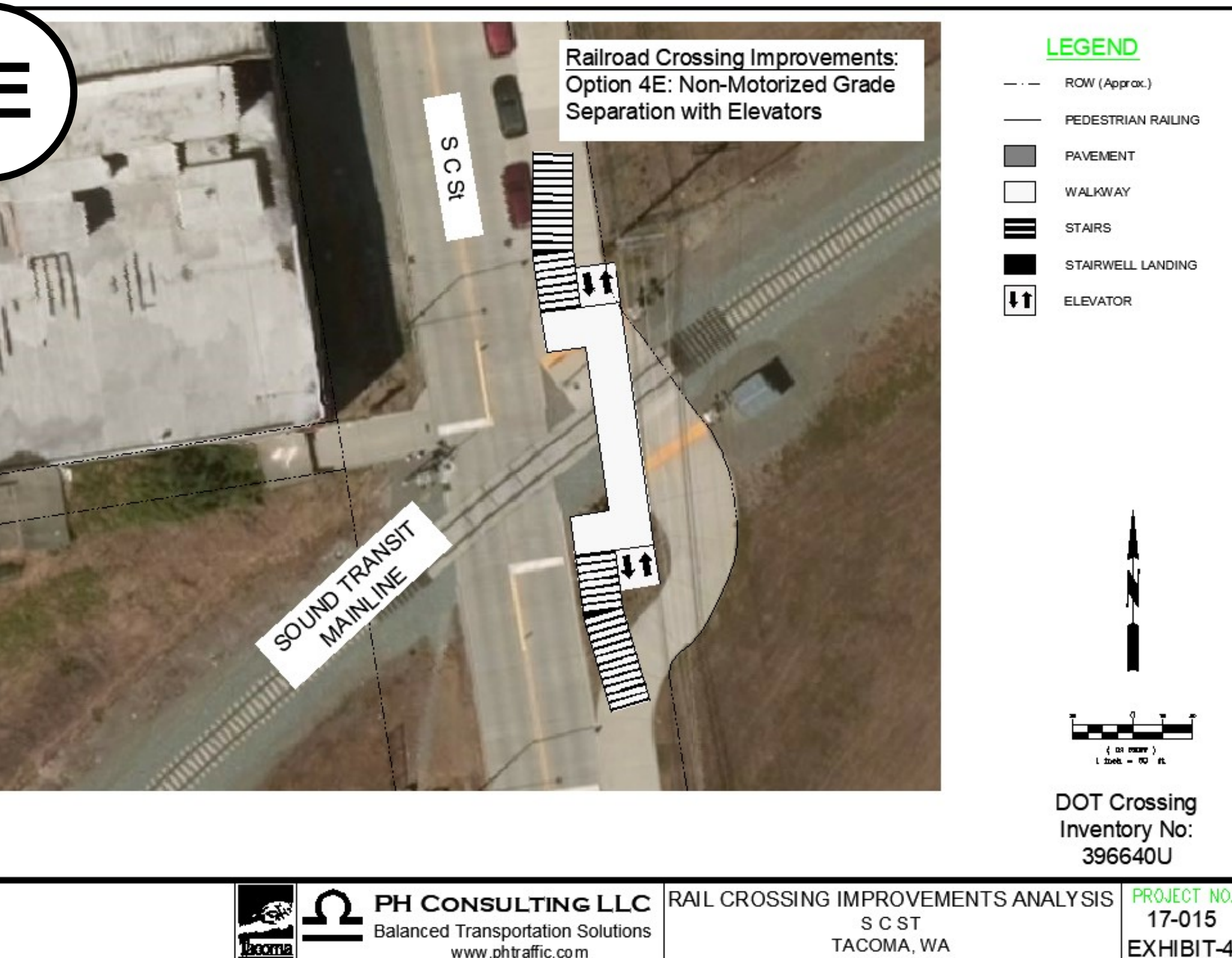
- Grade separation, two approach, elevated structure with bike and pedestrian facilities (15' wide). Approach begin S 25th St and mid-block South Tacoma Way.
- Close pedestrian crossing.
- Property impacts.



Example of a non-motorized grade separation pedestrian bridge.

Non-Motorized Grade Separation with Elevators

4E



- Elevators and stairs, two approaches with bike and pedestrian facilities (15' wide) structure.
- Close pedestrian crossing.
- Property impacts.



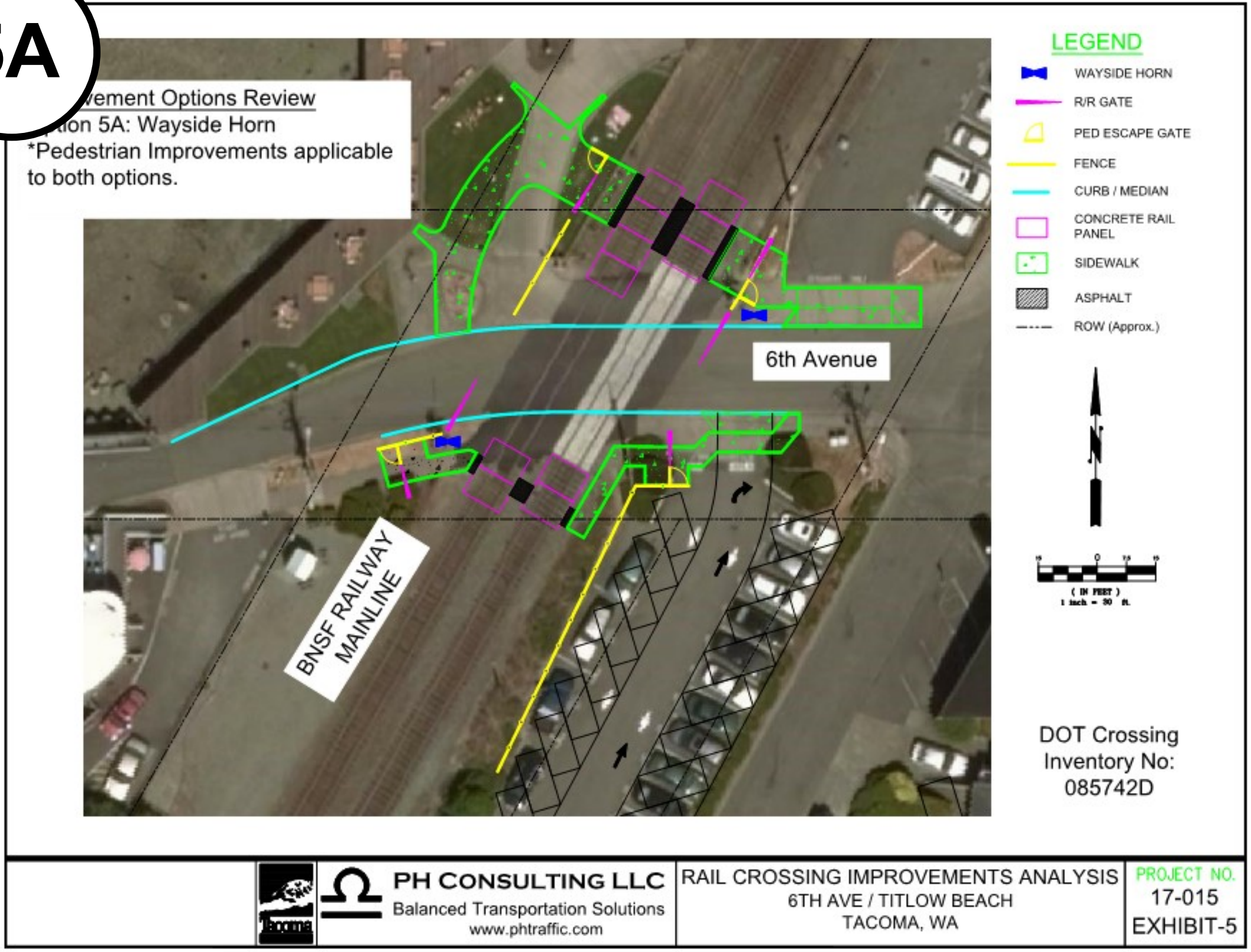
Example of a non-motorized grade separation pedestrian bridge with elevators.



Rail Crossing Options - 6th Ave

Wayside Horns & Pedestrian Improvements

5A

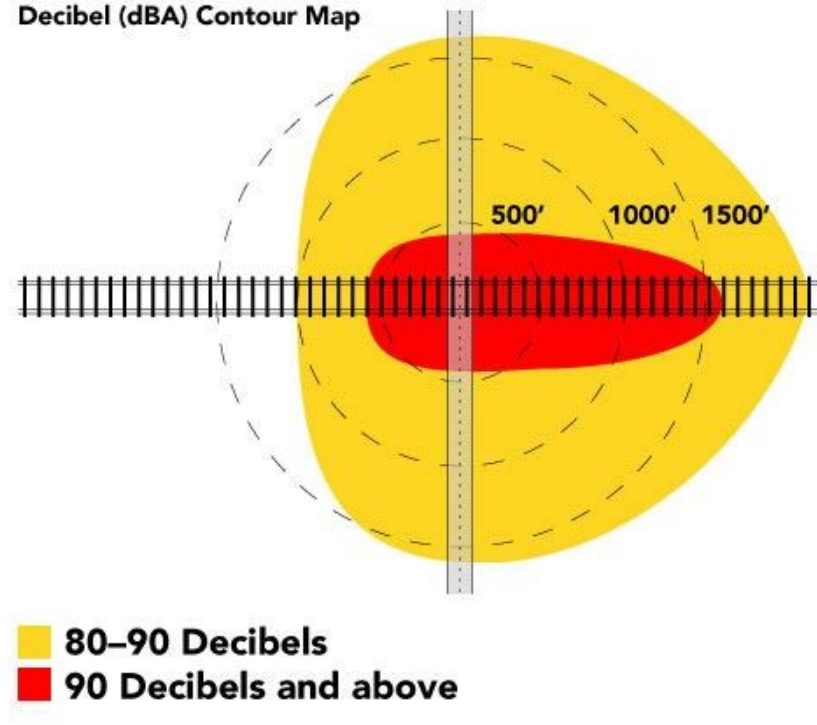


- Wayside Horns.
- Pavement Markings.
- Signs.
- Concrete Sidewalk.
- Fencing.
- Emergency Exit Gates.
- Detectible Warning.
- Pedestrian Gates.
- Concrete Crossing Panels.
- Two Quadrant Gate System.

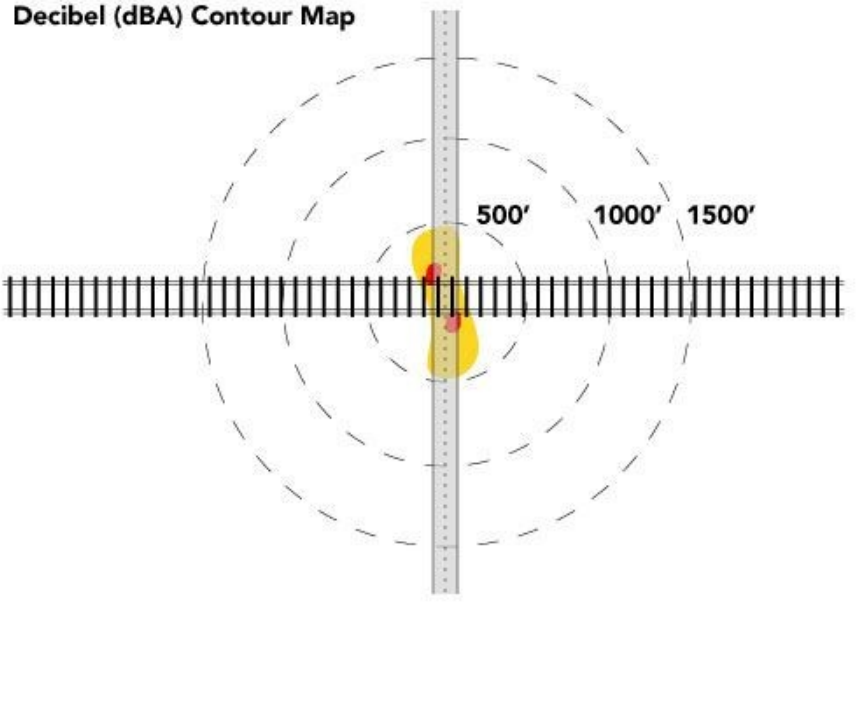


Example of wayside horns.

Train Horn



Wayside Horn

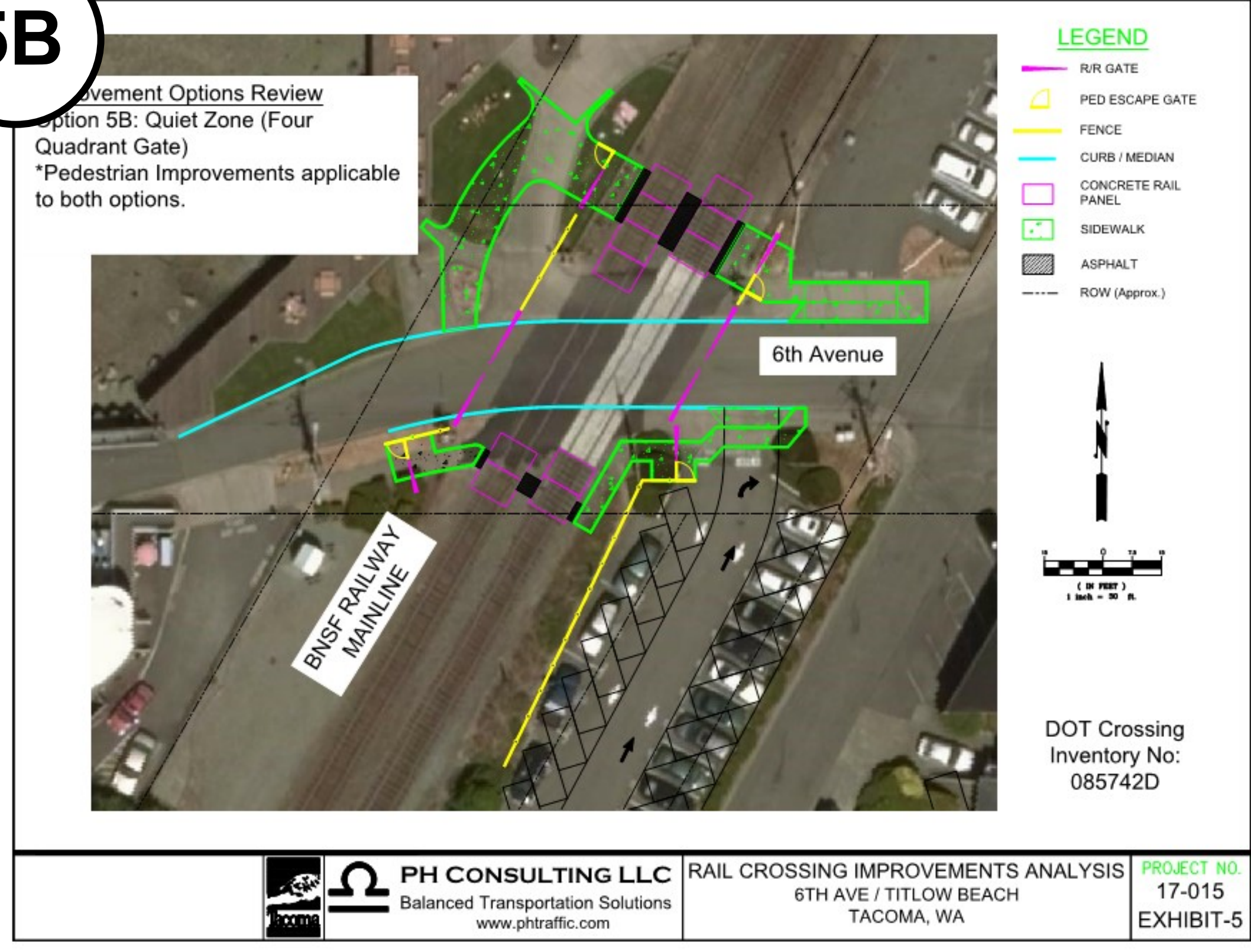


Decibel comparison between Wayside Horn and Train Horn.

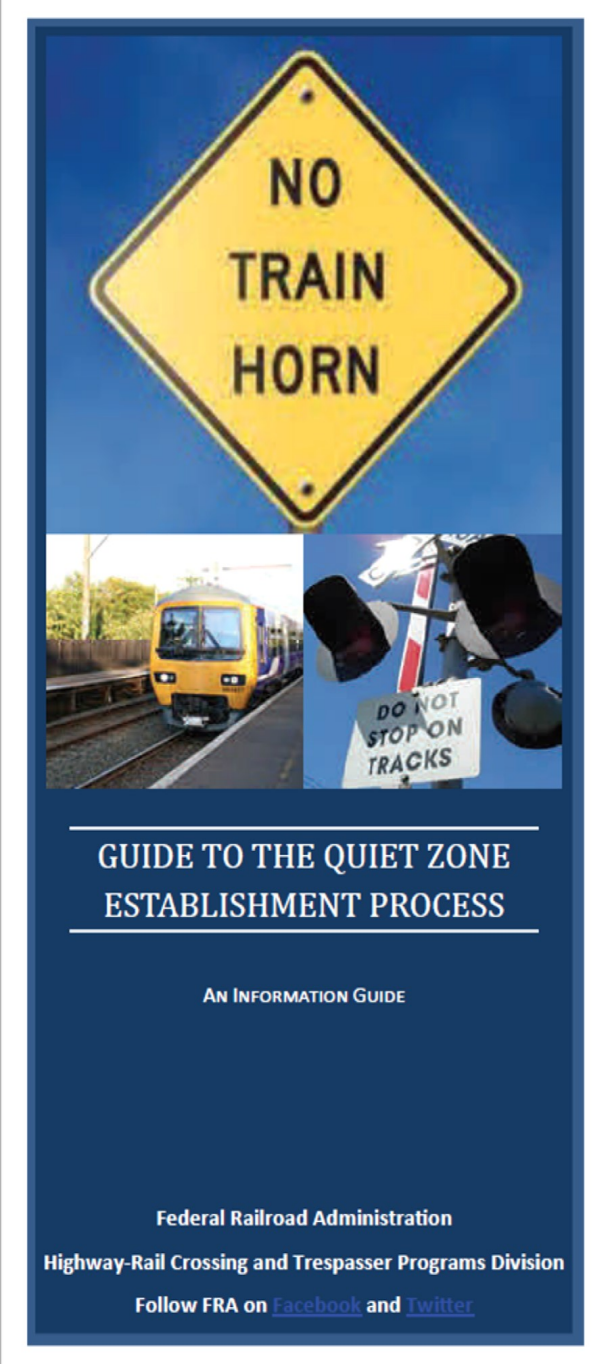


4 Quad Gates (Quiet Zone)

5B



- Four Quadrant Gate System.
- Pavement Markings.
- Signs.
- Concrete Sidewalk.
- Fencing.
- Emergency Exit Gates.
- Detectible Warning.
- Concrete Median.
- Channelization devices for meridian.
- Pedestrian Gates.
- Concrete Crossing Panels.



Example of a 4 quad gate system.

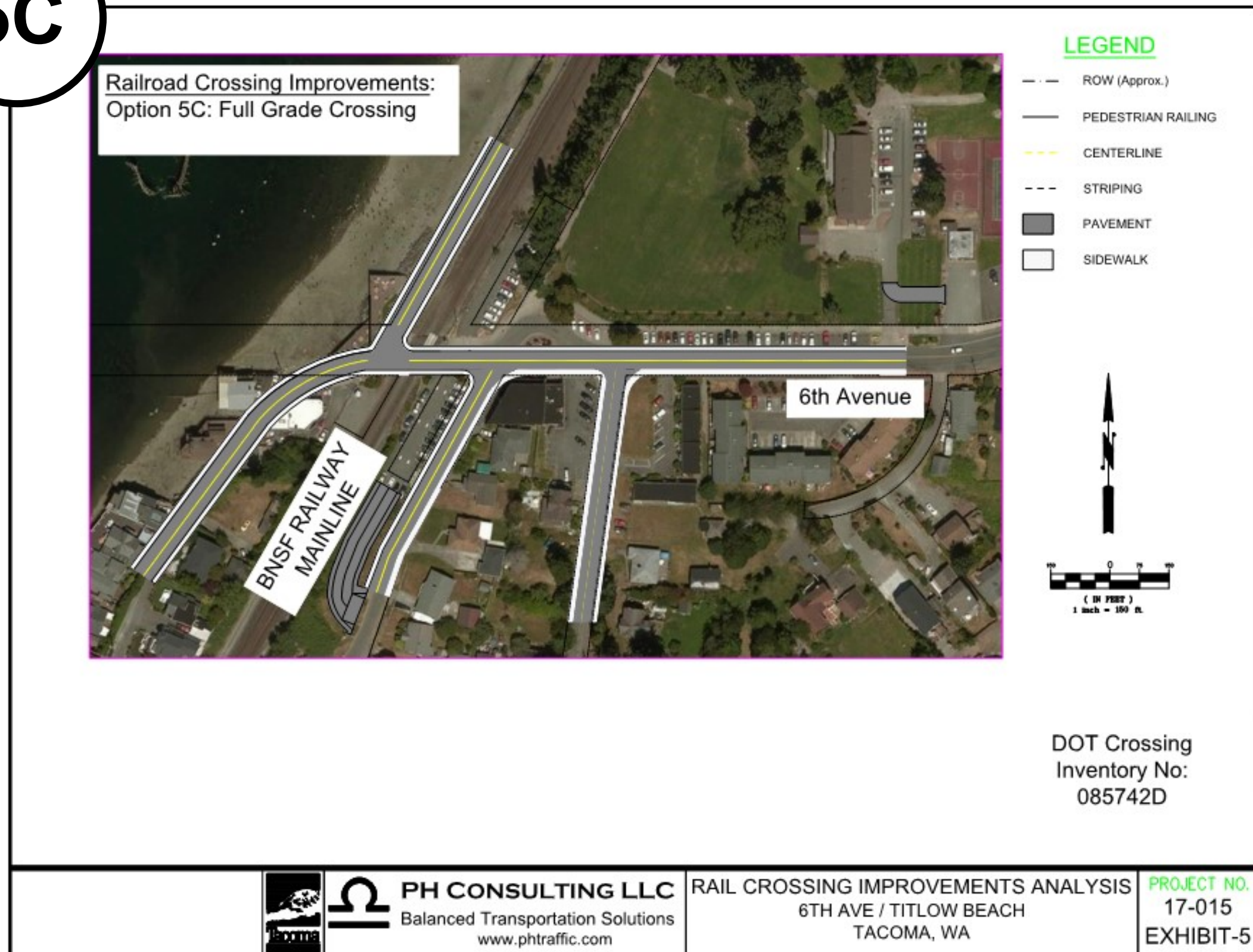




Rail Crossing Options - 6th Ave

Full Grade Separation (Quiet Zone)

5C



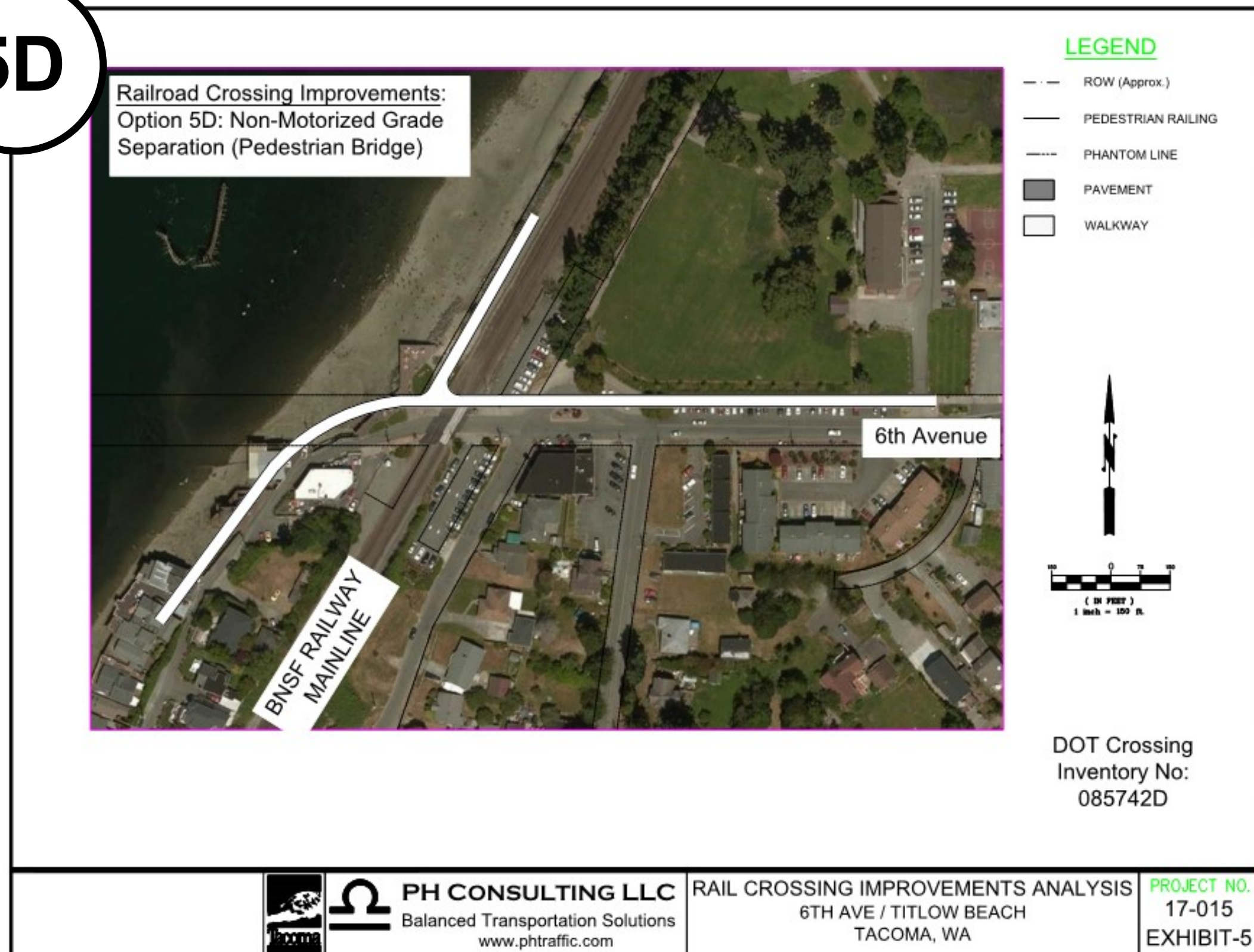
- 2-3 lane grade separation, three approach, elevated structure with bike and pedestrian facilities (36' wide).
- Rail crossing closure
- Property impacts.



Example of a full grade separation.

Non-Motorized Grade Separation with Ramps

5D



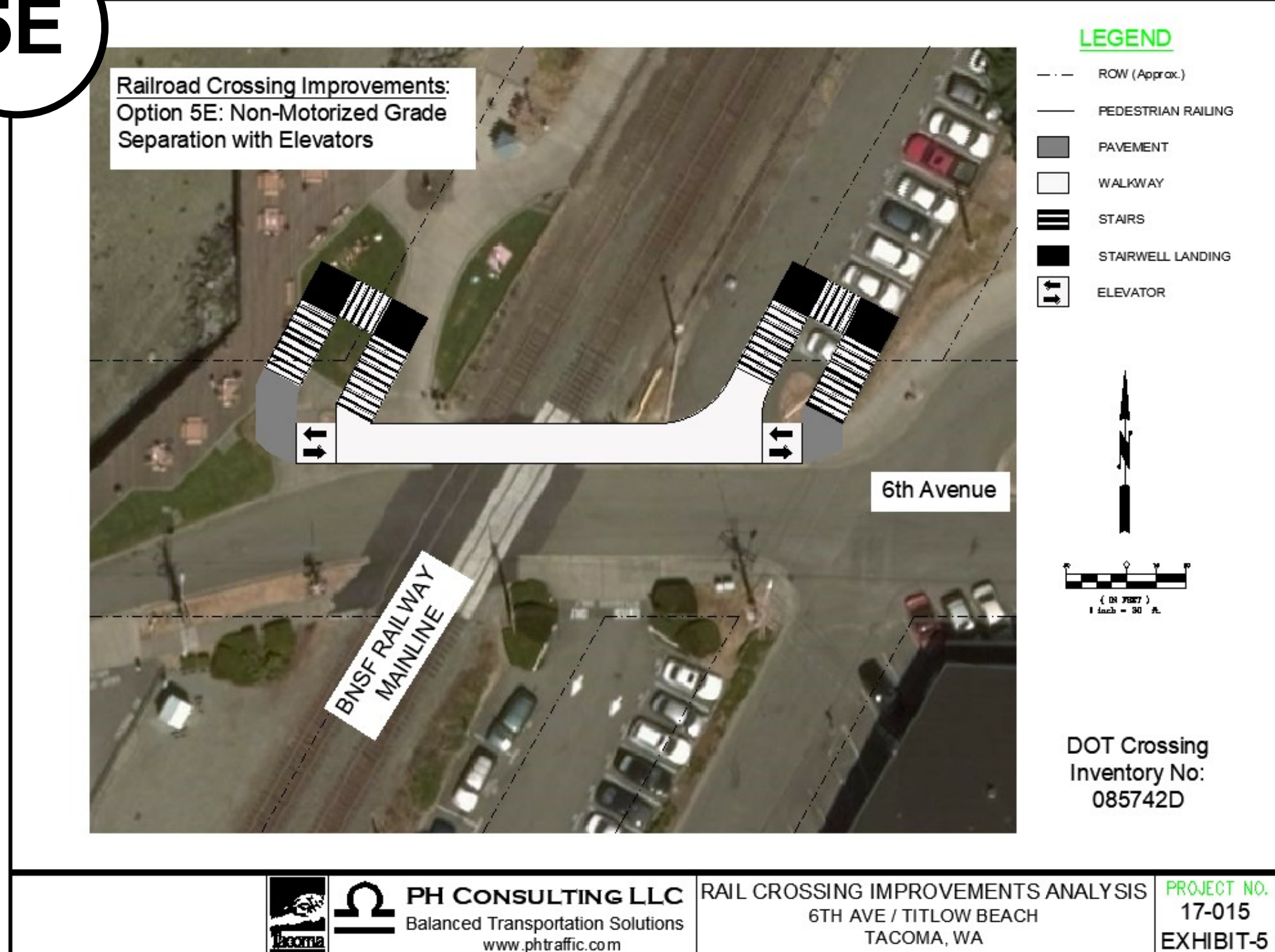
- Grade separation, three approach, elevated structure with bike and pedestrian facilities (15' wide).
- Close pedestrian crossing.
- Property impacts.



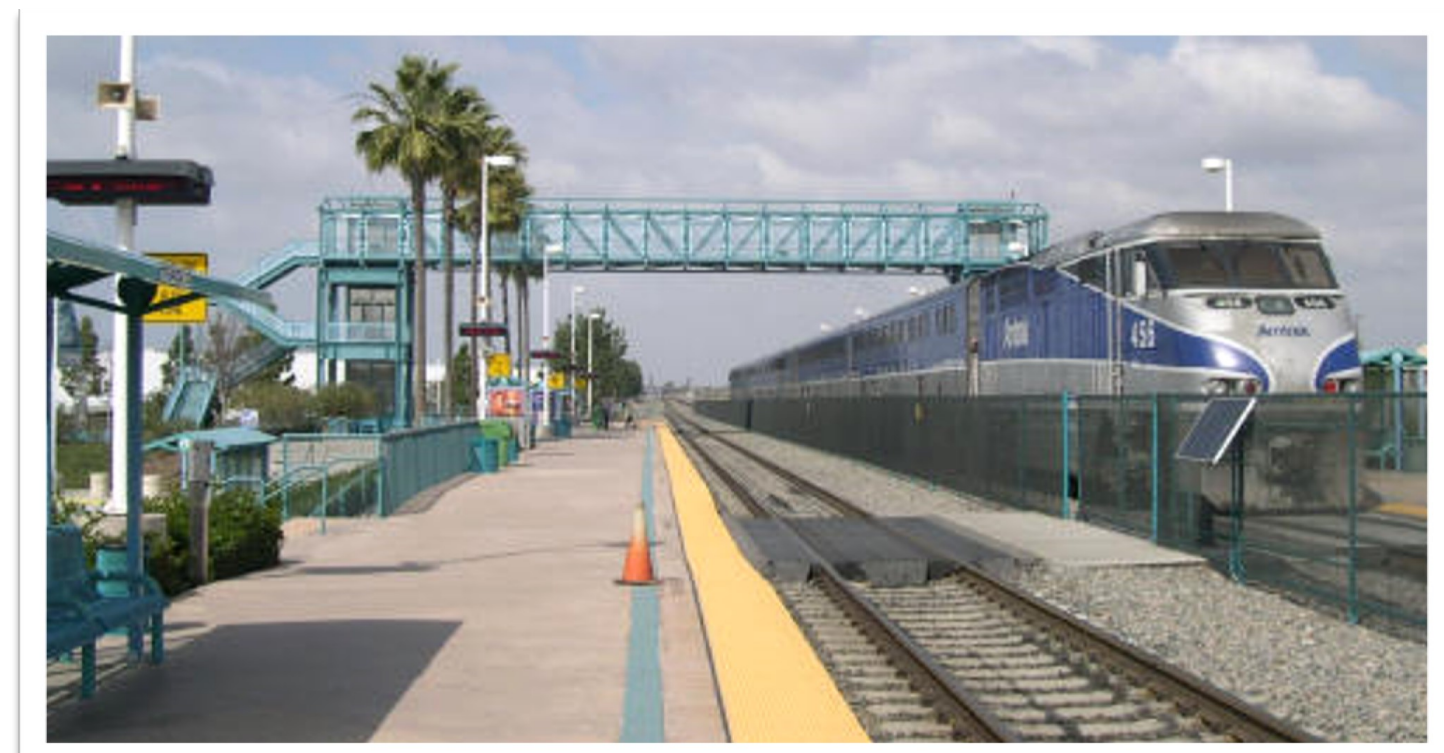
Example of a non-motorized grade separation pedestrian bridge

Non-Motorized Grade Separation with Elevators

5E



- Elevators and stairs, two approaches with bike and pedestrian facilities (15' wide) structure.
- Close pedestrian crossing.
- Property impacts.



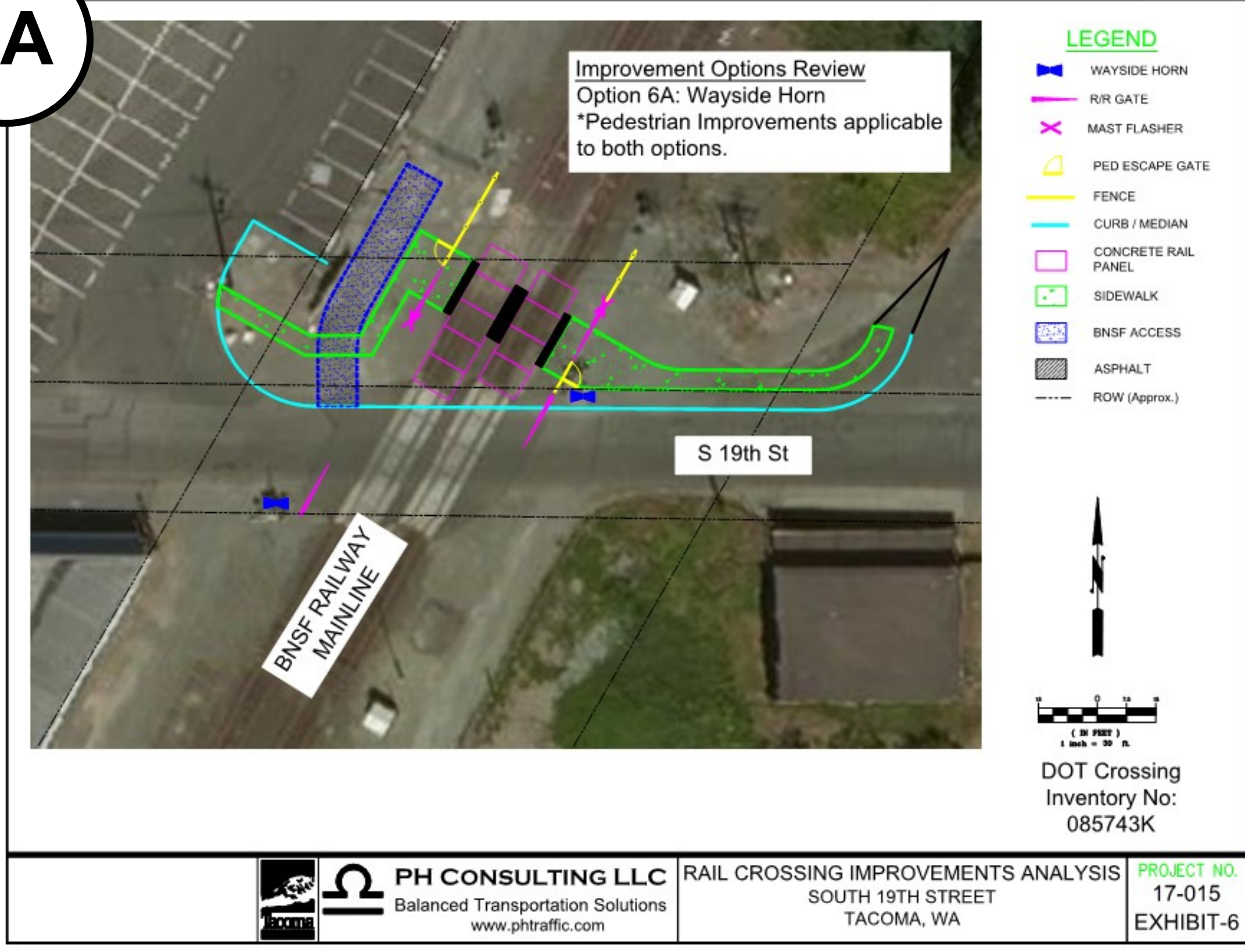
Example of a non-motorized grade separation pedestrian bridge with elevators.



Rail Crossing Options - S 19th St

Wayside Horns & Pedestrian Improvements

6A

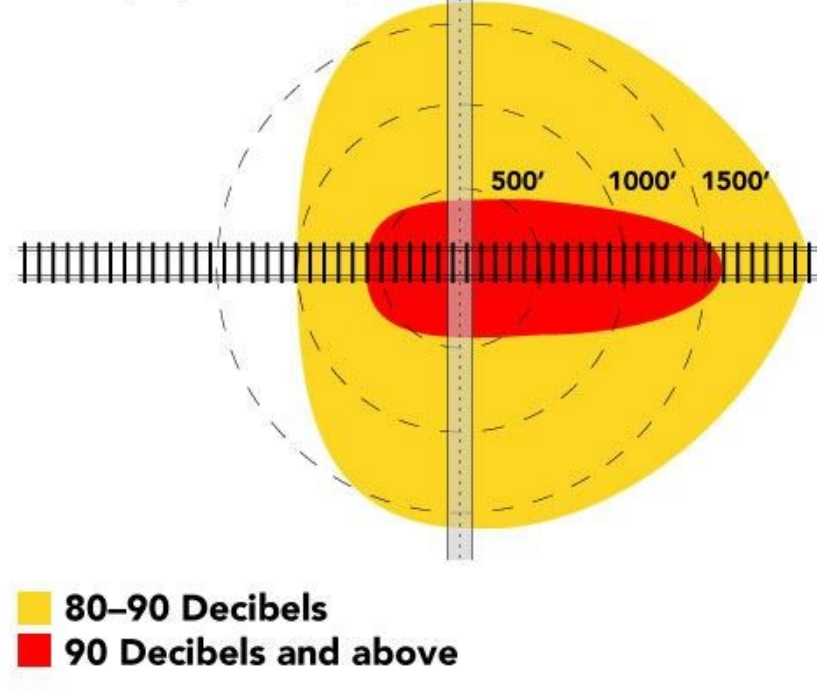


- Pavement Markings.
- Signs.
- Concrete Sidewalk.
- Install Emergency Exit Gates.
- Metal Fencing.
- Detectable Warning.
- Pedestrian Gates.
- Concrete Panels.
- Wayside Horn System and interconnect.

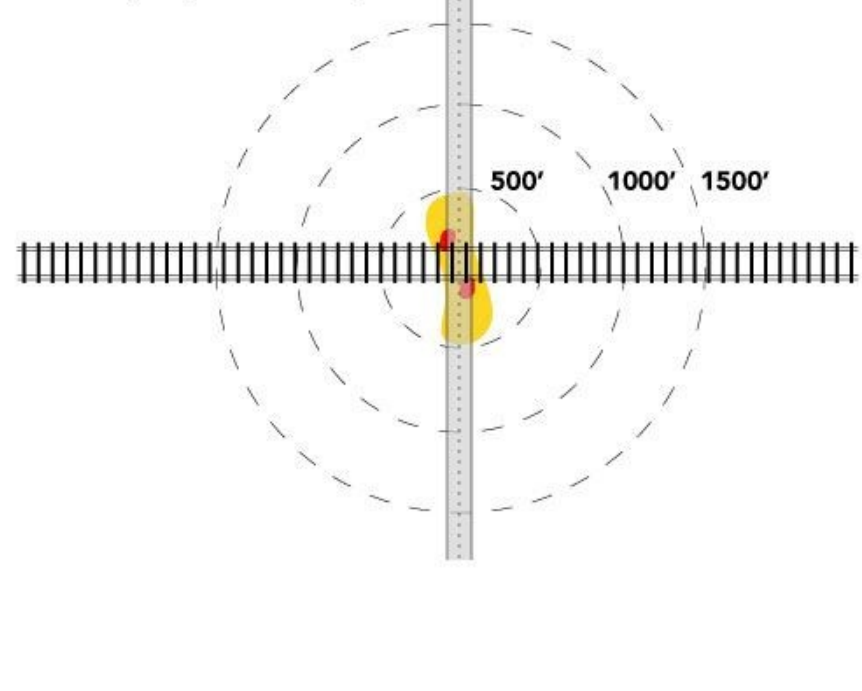


Example of wayside horns.

Train Horn



Wayside Horn

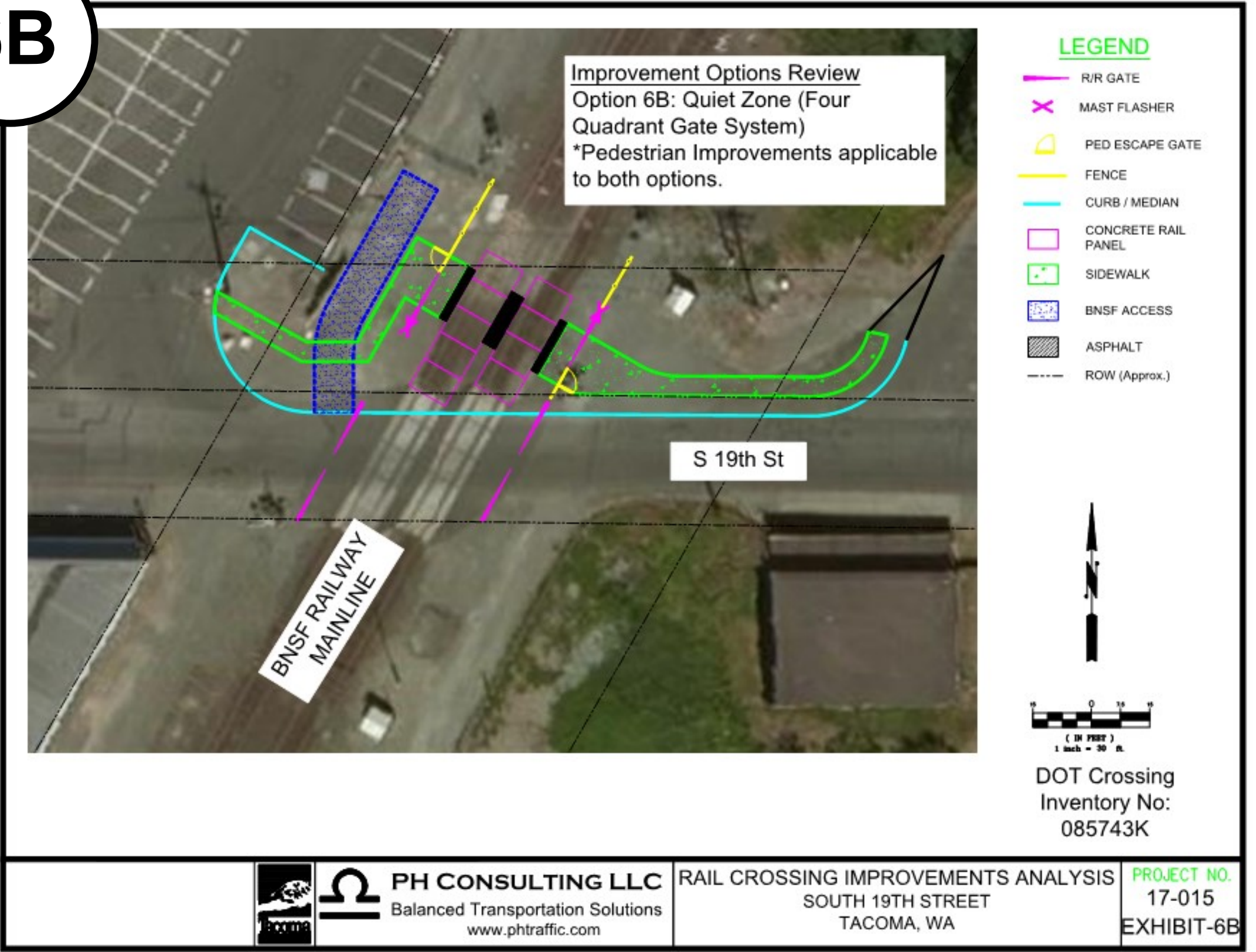


Decibel comparison between Wayside Horn and Train Horn.

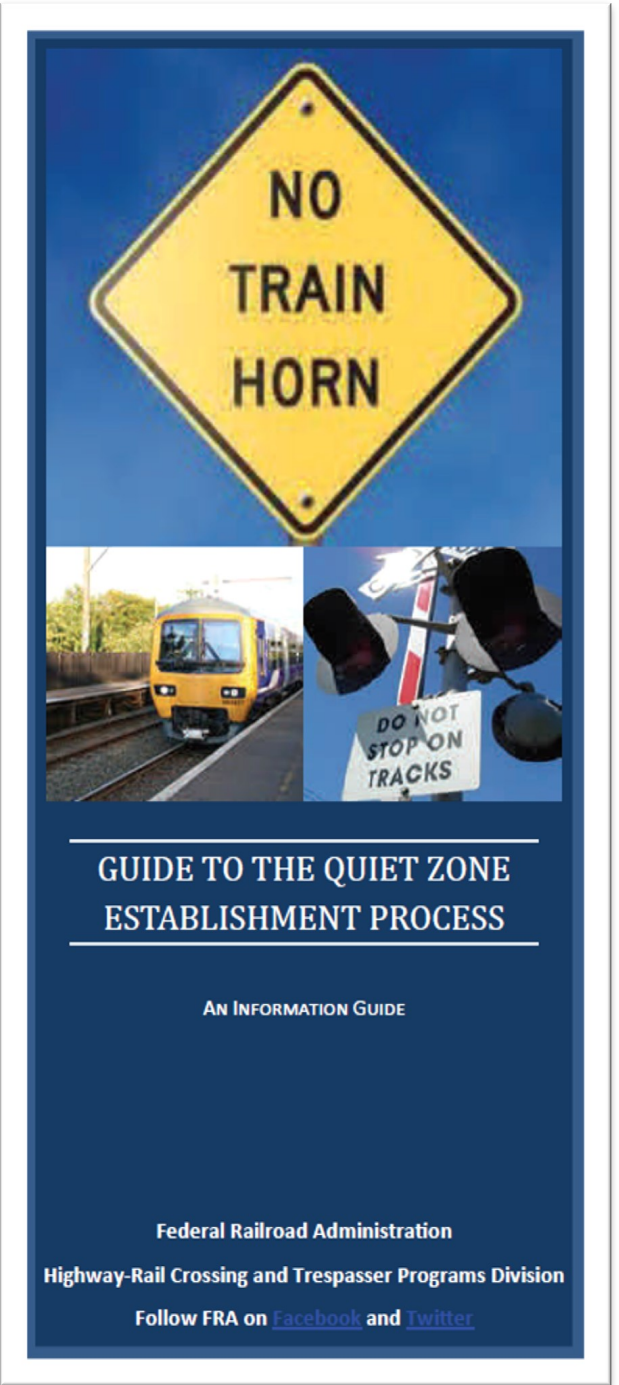


4 Quad Gates (Quiet Zone)

6B



- Pavement Markings.
- Signs.
- Concrete Sidewalk.
- Install Emergency Exit Gates.
- Metal Fencing.
- Detectable Warning.
- Concrete Panels.
- Pedestrian Gate.
- Four Quadrant Gate System.



Example of a 4 quad gate system.

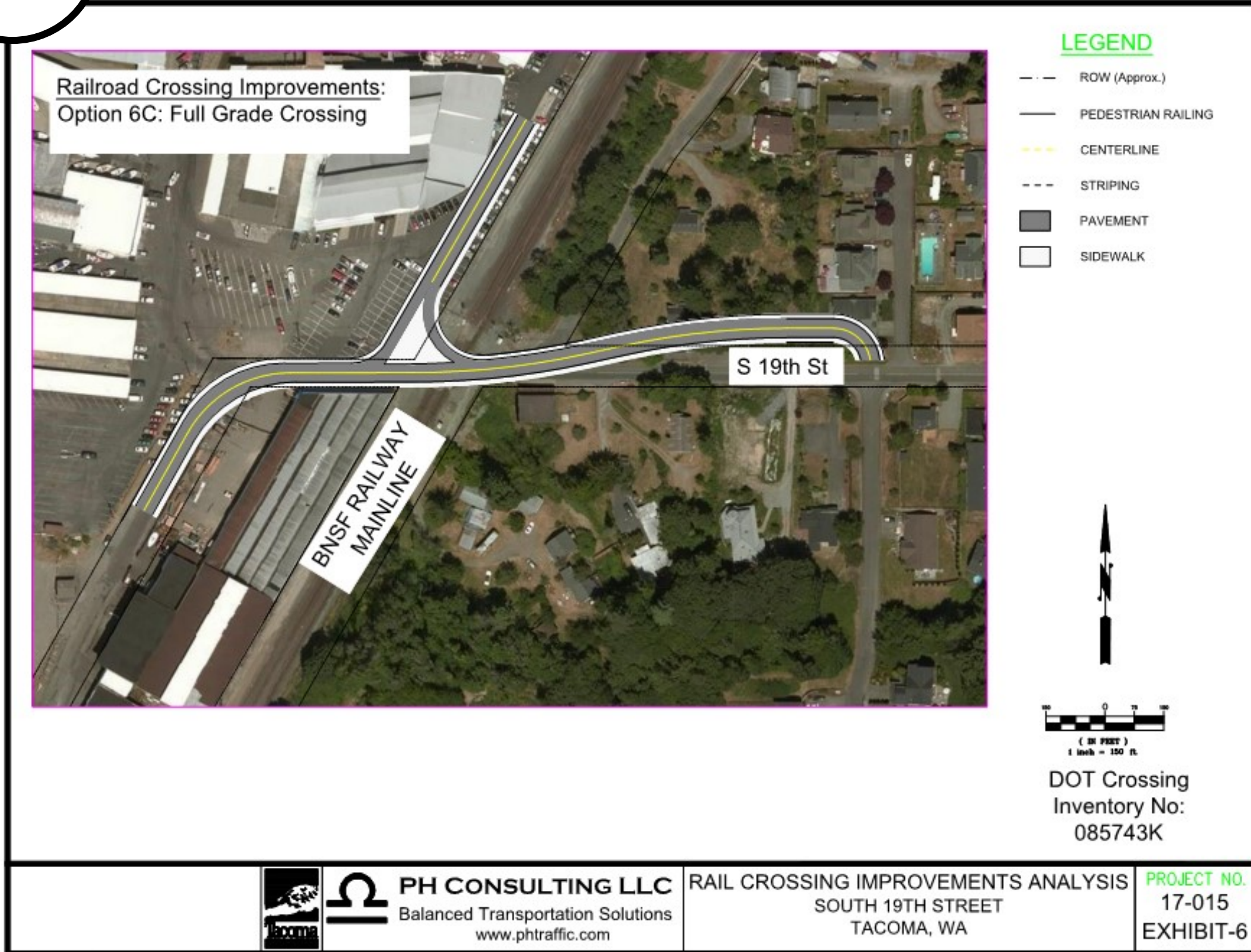




Rail Crossing Options - S 19th St

6C

Full Grade Separation (Quiet Zone)



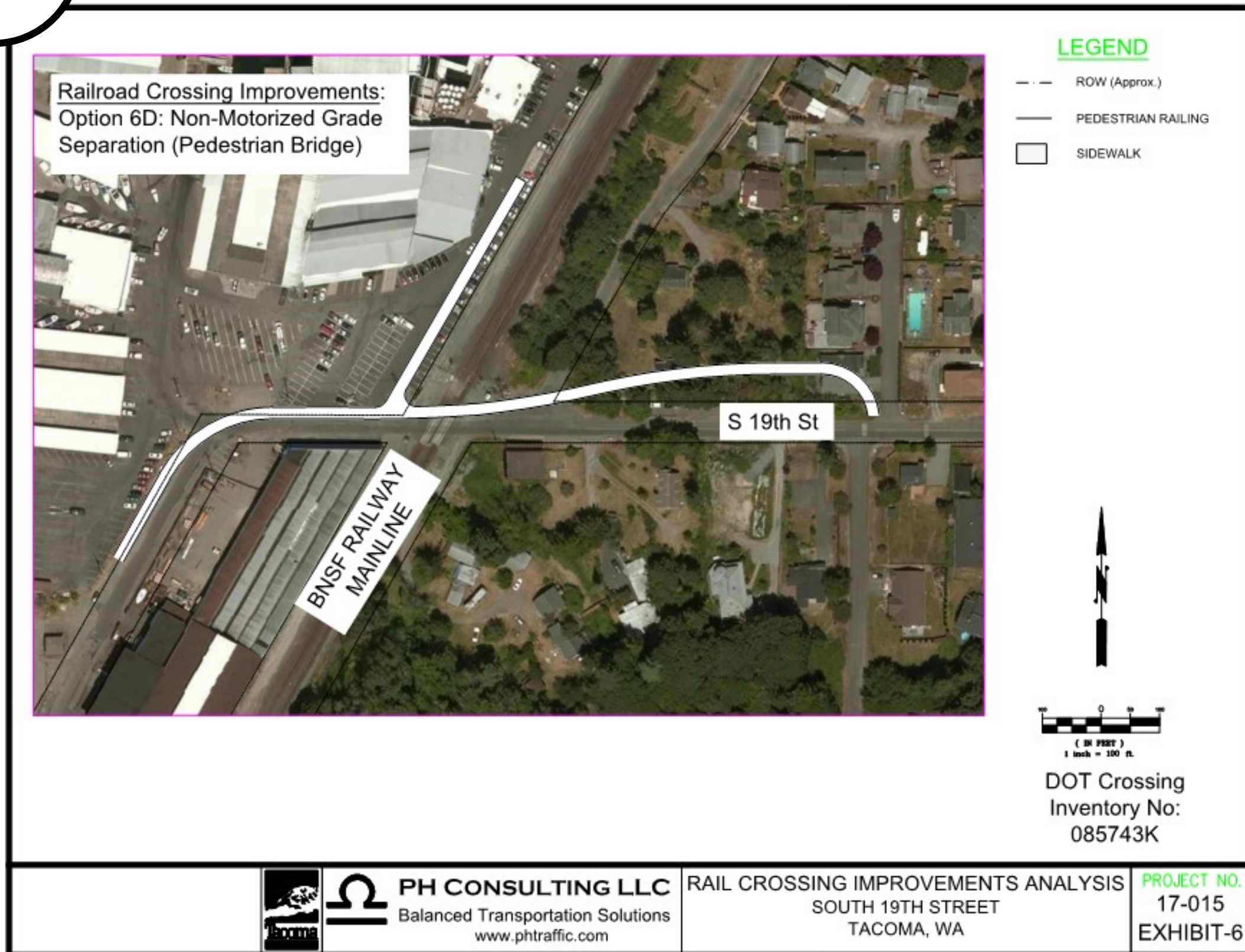
- 2-3 lane grade separation, three approach, elevated structure with bike and pedestrian facilities (36' wide).
- Rail crossing closure.
- Property impacts.



Example of a full grade separation.

6D

Non-Motorized Grade Separation with Ramps



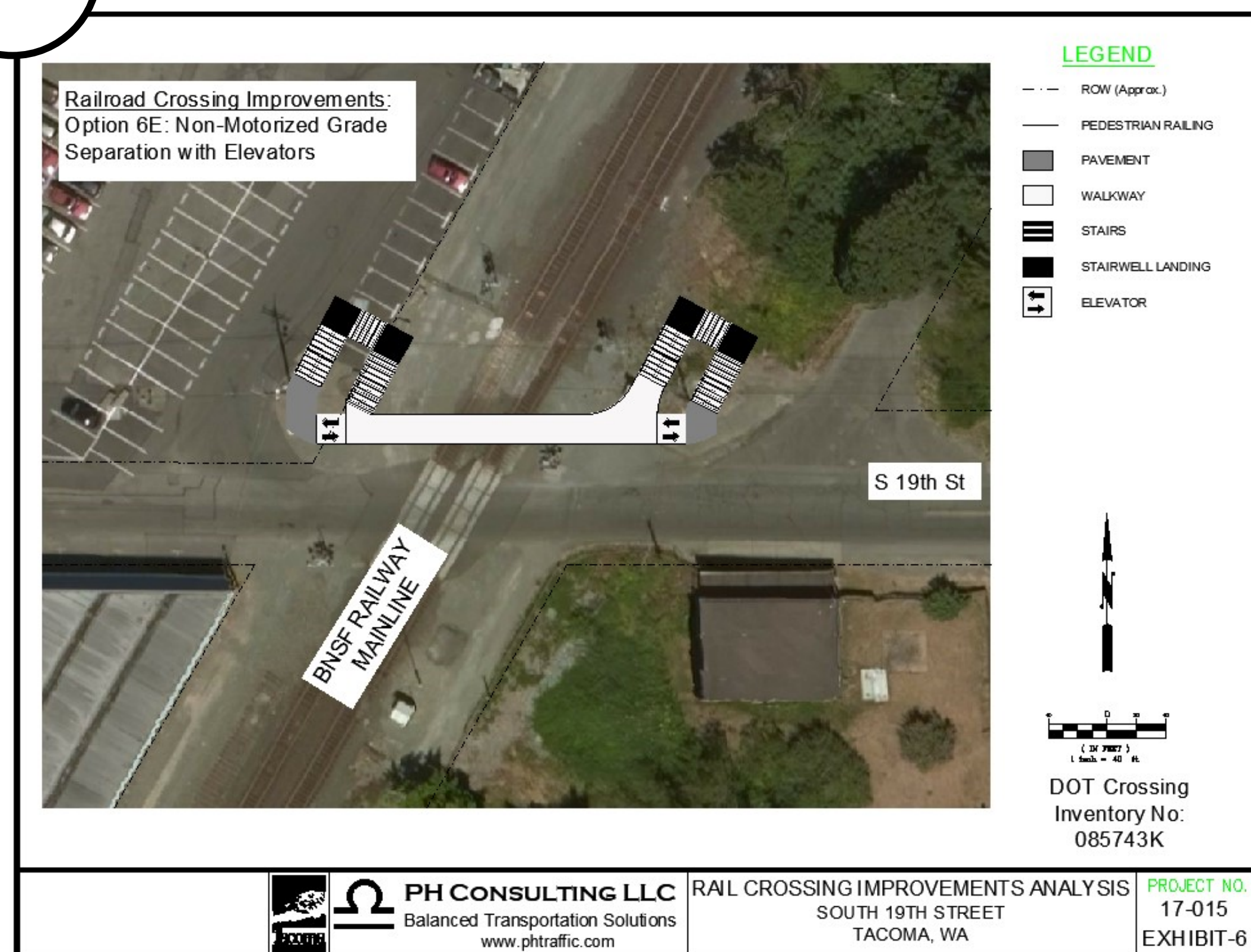
- Grade separation, three approach, elevated structure with bike and pedestrian facilities (15' wide).
- Close pedestrian crossing.
- Property impacts.



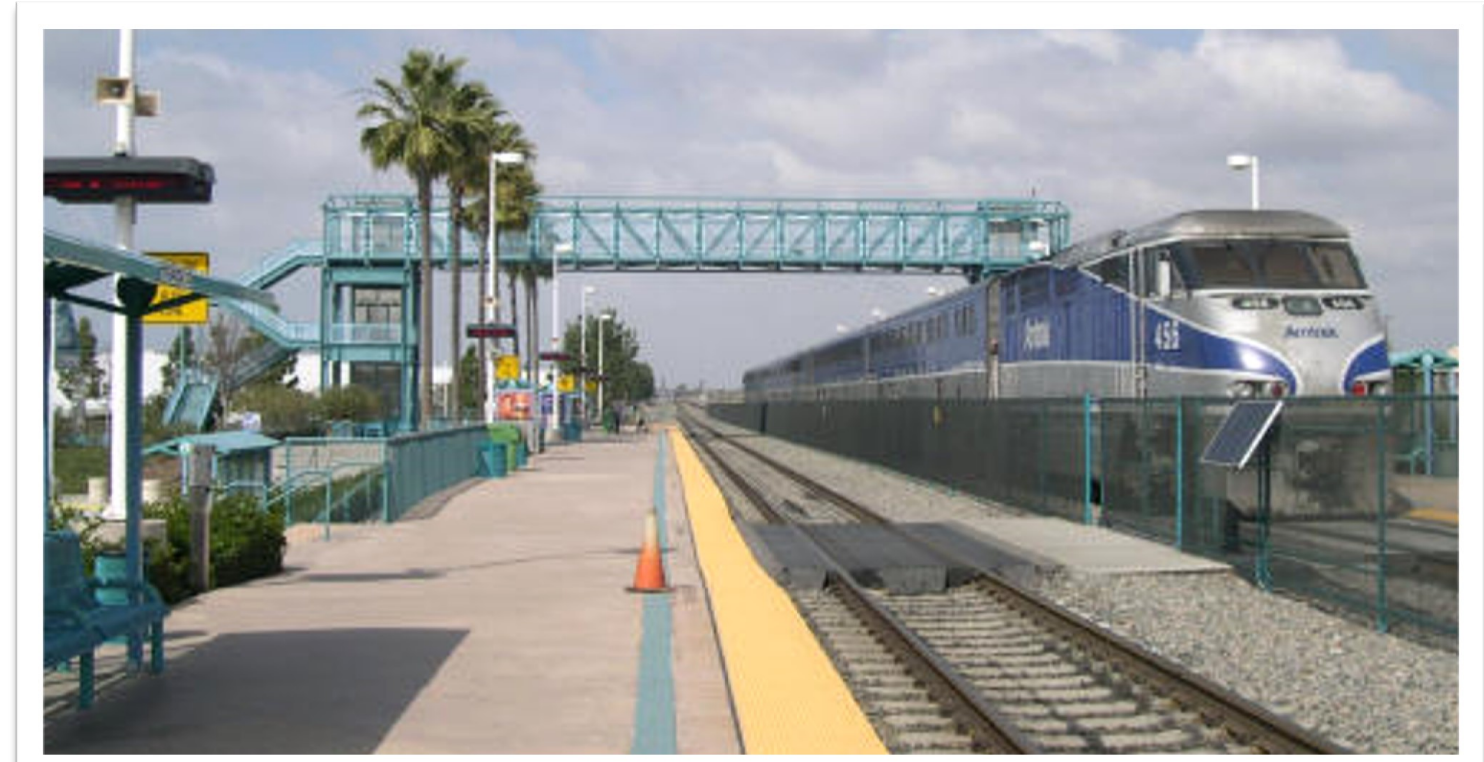
Example of a non-motorized grade separation pedestrian bridge.

6E

Non-Motorized Grade Separation with Elevators



- Elevators and stairs, two approaches with bike and pedestrian facilities (15' wide) structure.
- Close pedestrian crossing.
- Property impacts.



Example of a non-motorized grade separation pedestrian bridge with elevators.